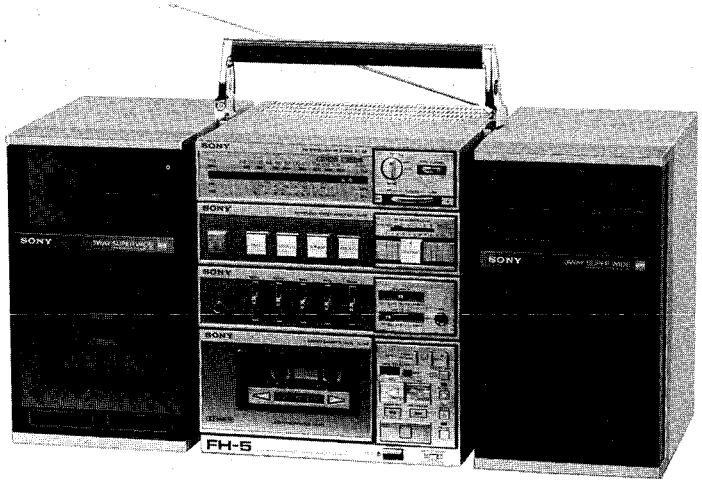
FH-5

SERVICE MANUAL

AEP Model
UK Model



FH-5 consists of ST-58, TA-58, TC-58 and APM-058.

'Dolby' and the double-D symbol are the trade marks of Dolby Laboratories Licensing Corporation. Noise reduction system manufactured under license from Dolby Laboratories Licensing Corporation.

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– Continued on page 2 –

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY SHADING AND MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

MICROFILM

COMPACT HI-DENSITY COMPONENT SYSTEM

SONY®

AUD

TA-58

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APM-058

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2. WIRING DIAGRAM APM-1
3. EXPLODED VIEW AND PARTS LIST APM-1

SPECIFICATIONS

ST-58

System: FM stereo, FM/AM superheterodyne tuner
PLL multiplex circuit

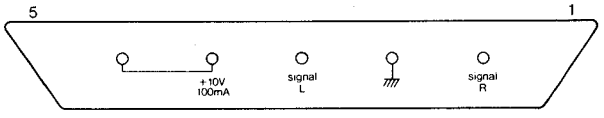
FM tuner section

Tuning range	87.5—108 MHz
Antenna	Telescopic antenna
Antenna terminals	75 ohm unbalanced
Intermediate frequency	10.7 MHz
Usable sensitivity	3 μV, S/N = 30 dB/75 ohm
Signal-to-noise ratio	75 dB (mono), 70 dB (stereo)
Harmonic distortion	0.5% (mono), 1% (stereo) at 1 kHz
Separation	Better than 40 dB at 1 kHz
Selectivity	55 dB (400 kHz)

MW/LW tuner section

		MW	LW
Tuning range		531—1,602 kHz	153—344 kHz
Antenna		Built-in ferrite bar antenna, External antenna terminal	
Intermediate frequency		450 kHz	450 kHz
Usable sensitivity (S/N 20 dB)	built-in antenna	250 μV/m (1,000 kHz)	500 μV/m (230 kHz)
	external antenna	100 μV (1,000 kHz)	150 μV (230 kHz)
Signal-to-noise ratio (50 mV/m)		52 dB	52 dB
Harmonic distortion (50 mV/m, 400 Hz)		0.5%	0.5%
Selectivity		30 dB (9 kHz)	40 dB (9 kHz)

5-pin DC output connector of TA-58 unit (to ST-58)



General

Dimensions	Approx. 215 × 55 × 245 mm (w/h/d) (8½ × 2⅛ × 9¾ inches) incl. projecting parts and controls
Weight	Approx. 0.9 kg (2 lb) net

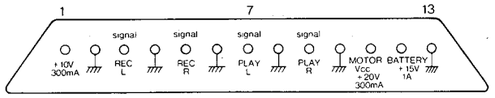
TC-58

Recording system	4-track 2-channel stereo
Frequency response	DOLBY NR OFF (DIN) With TYPE IV cassette (Sony METAL ES cassette) 60 - 16,000 Hz (±3 dB) With TYPE II cassette (Sony UCX cassette) 60 - 15,000 Hz (±3 dB) With TYPE I cassette (Sony HF-S cassette) 60 - 14,000 Hz (±3 dB)
Wow and flutter	0.07% WRMS (NAB) ±0.2% (DIN)

General

Dimensions	Approx. 215 × 105 × 240 mm (w/h/d) (8½ × 4¼ × 9½ inches) incl. projecting parts and controls
Weight	Approx. 2.6 kg (5 lb 12 oz) net

13-pin DC output connector of TA-58 unit (To TC-58)



Tape Transport Mechanism Type	TCM-130R10

TA-58

Continuous RMS power output
25 + 25 watts
(4 ohms, at 1 kHz, 5% THD)

Inputs

	Sensitivity	Impedance
PHONO	2.5 mV	50 kilohms
CD/AUX	250 mV	50 kilohms
MIC	1 mV	Low impedance

Frequency response PHONO: RIAA curve ± 0.5 dB
CD/AUX 30 Hz - 40 kHz $^{+0}_{-3}$ dB

Outputs
HEADPHONES Accepts headphones of 8 ohms or more
SPEAKER Accepts speakers of 4 to 16 ohms
PREOUT level/impedance = 250 mV/4.7 kilohms

General

Dimensions	Approx. 215 × 105 × 240 mm (w/h/d) (8½ × 4¼ × 9½ inches) incl. projecting parts and controls
Weight	Approx. 3.3 kg (7 lb 5 oz) net
Power requirements	AEP model: Operates on 220 V ac UK model: Operates on 240 V ac

APM-058

Speaker system	3-way speaker system Woofer: 77 cm², APM type Tweeter: 5 cm, cone type Super tweeter: 3.5 cm, cone type
Frequency range	70 Hz - 20 kHz
Sensitivity	88 dB/W/m
Impedance	4 ohms

General

Dimensions	Approx. 150 × 260 × 220 mm (w/h/d) (6 × 10¼ × 8¾ inches)
Weight	Approx. 2.7 kg (6 lb) net per unit

General

Power consumption	65 watts
Dimensions	Approx. 535 × 330 × 245 mm (w/h/d) (21⅛ × 13 × 9¾ inches) incl. projecting parts and controls
Weight	Approx. 13.4 kg (29 lb 9 oz) net Approx. 14.5 kg (32 lb) in shipping carton

FEATURES

The Sony FH-5 is a compact high-density component system consisting of an FM stereo/FM-AM tuner, a high quality cassette deck, and integrated amplifier. You can take it anywhere so that you can enjoy a variety of program sources—broadcast programs, taped programs, etc., anytime you like.
Each component matched to the FH-5 is the equal of fine separate components and has the following features:

- Three different power sources: house current, batteries and 12 V car battery.
- The connectable carrying handle makes the FH-5 carriable as a small suit case.

Amplifier section

- CD/AUX input jacks for connecting a CD (compact disc) player, external tuner or cassette deck and phono input jacks for listening to records.
- MIC jack for mixing sound from an external microphone, with other sound sources.
- The sound adjusted by the equalizer or mixed with other sound sources can be recorded onto another cassette deck through the PRE OUT jacks.
- Permits headphones to be connected. Their volume is adjustable.
- This section supplies power to the tuner and cassette deck.

Tuner section

- High sensitivity and high selectivity.
- The PLL multiplex circuit assures stable FM reception.
- Built-in telescopic antenna for FM and reception external antenna terminals.

Cassette deck section

- The cassette deck can use the metal tapes, providing wider dynamic range and extended frequency response.
- Auto-reverse function enables you to repeat playback of both sides of the cassette, once or continuously.
- Automatic music sensor (AMS) allows easy playback of the selection being played and easy skipping to the next selection.
- The automatic recording control system sets the recording level automatically.
- The record muting function allows you to eliminate material you do not want to record, such as commercials, and to make a blank space between selections.
- The Dolby NR (noise reduction) system reduces tape hiss and assures high quality recording and playback.

MODEL IDENTIFICATION

(TC-58 & APM-058 have no differences between AEP and UK models.)

- This label is sticked on TA-58. ... For WEST GERMANY

SONY® MODEL NO. FH-5
COMPACT HI-DENSITY COMPONENT SYSTEM
ST-58: FM STEREO/FM-AM TUNER
TA-58: INTEGRATED STEREO AMPLIFIER
TC-58: STEREO CASSETTE DECK
APM-058: SPEAKER SYSTEM
AC: 220 V ~ 50/60 Hz 65 W
FTZ 11/585
SERIAL NO.
MADE IN JAPAN

ST-58

SONY® MODEL NO. ST-58
FM STEREO/FM-AM TUNER
COMPACT HI-DENSITY COMPONENT SYSTEM FH-5
FREQUENCY RANGE:
MW: 522 – 1602 kHz LW: 153 – 344 kHz
IF FM; 10.7 MHz AM; 450 kHz
SERIAL NO.
MADE IN JAPAN

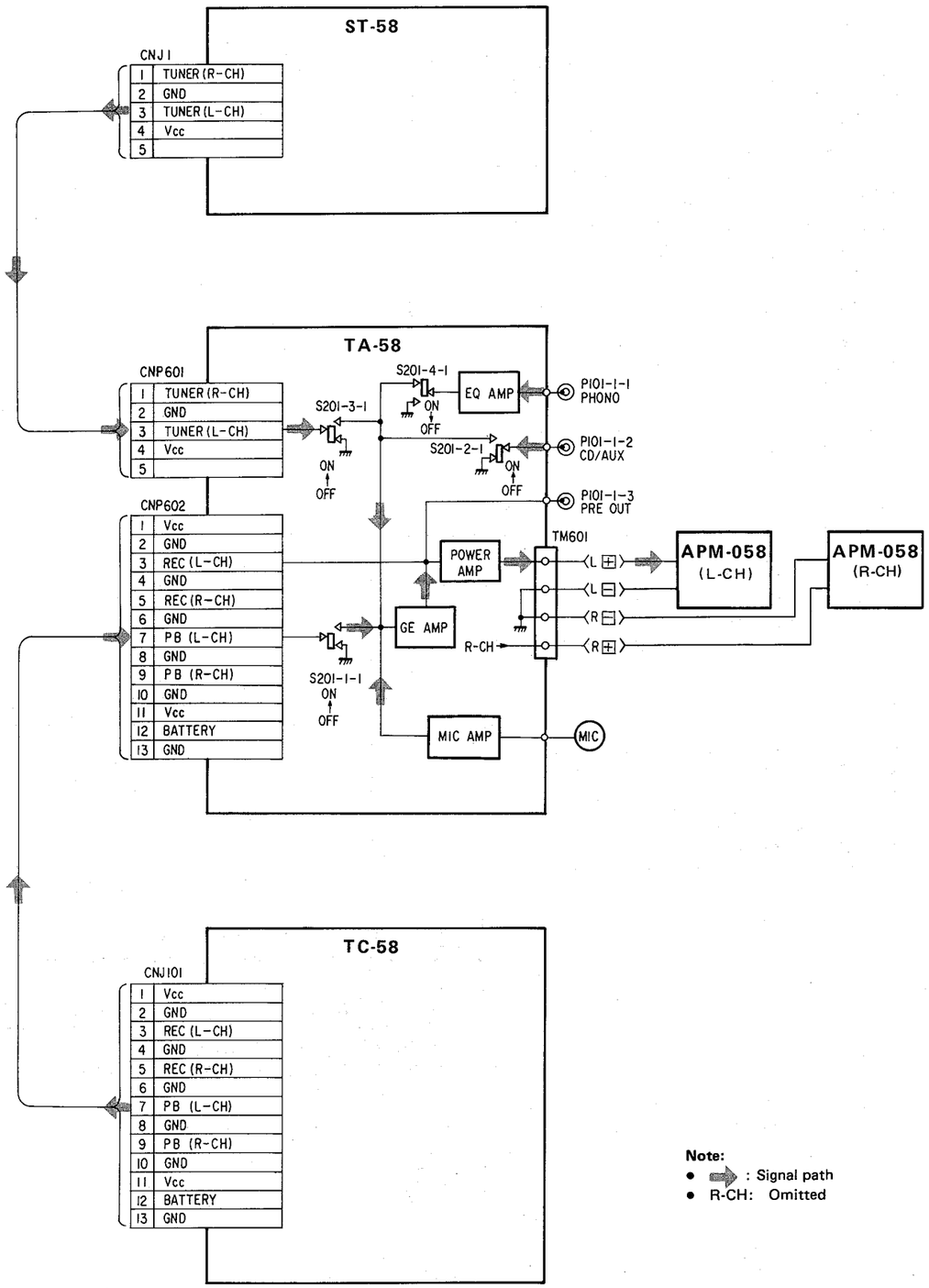
FM: 87.5 – 108 MHz ... AEP, UK Model
FM: 87.6 – 108 MHz ... For WEST GERMANY

TA-58 ... Except for WEST GERMANY

SONY® MODEL NO. TA-58
INTEGRATED STEREO AMPLIFIER
COMPACT HI-DENSITY COMPONENT SYSTEM FH-5
50/60 Hz 65 W
SERIAL NO.
MADE IN JAPAN

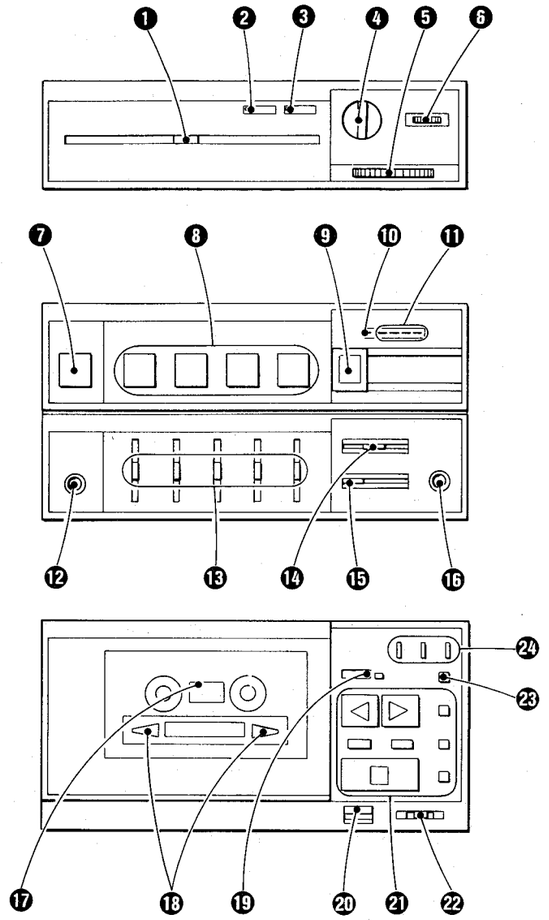
AC: 220 V ~ ... AEP Model
AC: 240 V ~ ... UK Model

CONNECTION BETWEEN EACH SET AND SIGNAL PATH



Note:
- ⇨ : Signal path
- R-CH: Omitted

FUNCTION OF CONTROLS



Tuner ST-58

❶ Frequency scale
Permits reading of the received frequency.

❷ STEREO indicator
This indicator will light when an FM stereo program of sufficient signal strength is tuned in.

❸ TUNED indicator
Lights up when a signal is tuned in accurately.

❹ BAND selector
Selects the desired band.
FM, MW or LW.
For FM reception, normally set to FM. When it is difficult to hear the broadcast due to noise, set the STEREO/MUTING button to OFF. The reception will be more stable and noise will be reduced

❺ TUNING knob
Turn the tuning knob to the left (–) to go to a lower frequency and to the right (+) to go to a higher.

❻ STEREO/MUTING button

This button serves the dual purpose of a mode and FM muting switch. Normally keep this switch depressed (⏏ ON) to eliminate FM interstation noise while tuning from station to station. The tuner operates in stereo mode for stereo sound sources and will be automatically switched to mono mode for monaural sound sources.

Amplifier TA-58

❼ POWER switch
Press to turn on the powers of amplifier, tuner and cassette deck.
To turn them off, press it again.

❽ FUNCTION selectors
Press the desired program source button.
TAPE: For taped programs.
CD/AUX: For compact disc or auxiliary programs connected to CD/AUX jacks.
TUNER: For broadcasting programs.
PHONO: For disc programs connected to PHONO inputs.

❾ VOLUME control
This controls the overall output level.

❿ OPR/BATT indicator
This indicator lights up while the unit is in operation. On battery operation, this also shows the battery condition. When the batteries become weak while the unit is in operation, the OPR/BATT indicator will glow faintly or flicker. When the batteries are exhausted completely, the indicator will not light.

⓫ PEAK POWER LEVEL meters
These meters show the output level of the power amplifier.

⓬ HEADPHONES jack
Accepts headphones with a stereo phone plug. The headphone volume can be adjusted with the volume control.

⓭ Graphic equalizer controls and indicators
The indicators light when the POWER switch is set to ON.
Slide the controls downwards or upwards to equalize the reproduced sound. To cut equalization, set the controls to 0 (center position).

⓮ BALANCE control
This controls the balance of the left and right channel output level. Normally set the control to the center position.

⓯ MIC LEVEL control
This controls the input level of the microphone.

⓰ MIC (microphone) jack
Connect a microphone with a phone plug to the MIC jack. For connecting a microphone with a mini plug, use the plug adaptor Sony PC-2M (optional). Disconnect the microphone when not in use.

Cassette deck TC-58

⑰ Cassette holder

⑱ Tape direction indicators
During playback or recording, one of the indicators illuminates to show the direction of the tape transport.

⑲ TAPE COUNTER and reset button
The TAPE COUNTER provides a numerical reference point while recording which can be used to index a recorded cassette. To reset to zero, press the reset button.

⑳ ⏏ (eject) button
Press this button to open the cassette holder.

㉑ Function buttons
It is possible to switch directly from one mode to another.
- **▶ (forward) button:** Press this button to play back the front side of the cassette. The tape is transported to the right.
- **▶▶ (fast-forward) button:** Press this button to advance the tape rapidly to the right.
- **● (record) button:** Press this button together with the ▶ button to start recording. The indicator will illuminate.
- **■ (stop) button:** To stop the tape, press this button.
- **❚❚ (pause) button:** To stop the tape for a moment during recording or playback, press this button. To restart, press this button again. This button is also used to control more precisely the start of recording and to release the record muting mode. This button also operates during playback of the reverse side.
- **○ (record muting) button:** Press this button to eliminate unwanted material and to insert a blank space during recording.
- **◀ (reverse) button:** Press this button to play the back side of the cassette.
- **◀◀ (fast-reverse) button:** Press this button to advance the tape rapidly to the left.

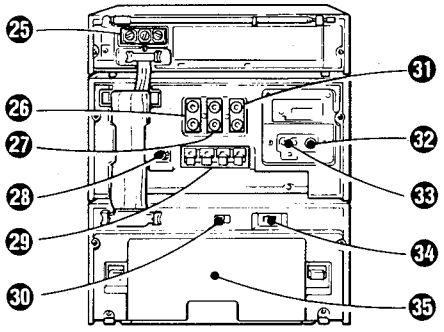
㉒ TIMER STANDBY switch
You can set the unit to record or play back at a predetermined time by connecting any commercially available timer. To record, set this TIMER STANDBY switch to REC. To playback, set it to PLAY.

㉓ DOLBY NR button
To record with the Dolby NR* (Noise Reduction) process, depress this button. To record without the Dolby NR process, press again and release this button.
When playing back, set this button to the same position used in recording.

*"Dolby" and the double-D symbol are trade marks of the Dolby Laboratories Licensing Corporation. Noise reduction system manufactured under license from Dolby Laboratories Licensing Corporation.

㉔ TAPE select buttons
Depress an appropriate button according to the type of tape to be used.

rear panel



㉕ External antenna and ground terminals

㉖ PHONO input jacks
For connecting an optional turntable system.

㉗ CD/AUX input jacks
For connecting a CD player, additional tuner, cassette deck, etc.

㉘ Ground terminal (⏚)
For connecting the ground wire of a turntable system.

㉙ Speaker terminal
Connect the speaker system APM-058 with the supplied speaker cords.

㉚ ISS (Interference suppress switch)
If interference is encountered while recording MW or LW program, slide the switch to 2 or 3 position depending on which best reduces the noise. Normally set the switch to 1 position.

㉛ PRE OUT jacks
For recording on to an additional cassette deck the sound adjusted by the equalizer or the sound mixed with sources.

㉜ Car battery cord jack
For connecting use the optional Sony DCC-16AE connecting cord.

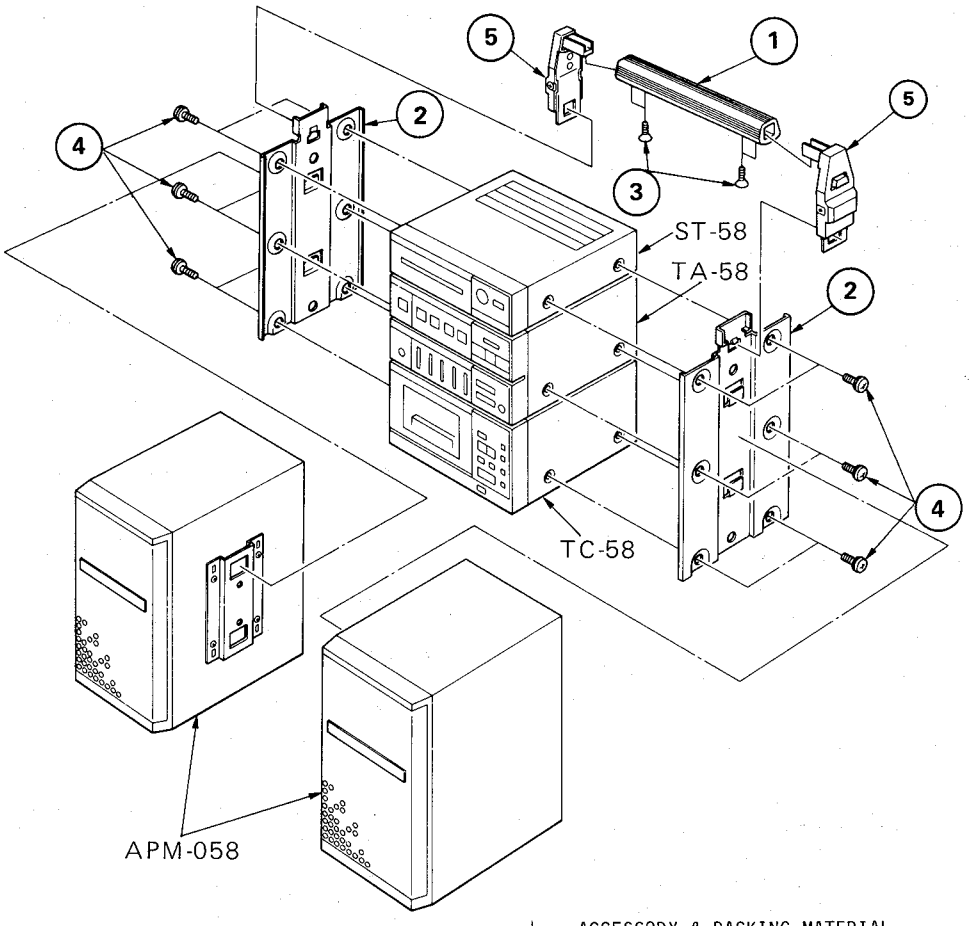
㉝ AC power input

㉞ DIRECTION MODE switch
- ⇄ : for repeat playback of both sides of a cassette.
- → : for playing back from the front to the reverse side once only.

If playback begins with the reverse side, the tape will stop after this side is played back once.

㉟ Battery compartment

EXPLODED VIEW AND PARTS LIST



No.	Part No.	Description	REMARKS
1	2-249-402-21	HANDLE	
2	4-902-945-01	(SILVER)...PLATE (A), SIDE	
2	4-902-945-11	(BLACK)....PLATE (A), SIDE	
3	7-685-247-29	SCREW +KTP 3X10 TYPE2 SLIT	
4	X-4902-909-1	SCREW ASSY, SIDE PLATE	
5	X-4902-924-1	BRACKET ASSY, HANDLE	

NOTE:
- The mechanical parts with no reference number in the exploded views are not supplied.

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Les composants identifiés par une trame et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

ACCESSORY & PACKING MATERIAL

Part No.	Description
1-555-839-00	CORD, SPEAKER
⚠1-555-234-00	(AEP,G-AEP)...CORD, POWER
⚠1-558-032-11	(UK).....CORD, POWER
3-309-143-00	(TA-58,TC-58)...BAG, PROTECTION
3-701-630-00	BAG, POLYETHYLENE (FOR PRINTED MATTER)
3-701-613-00	BAG, POLYETHYLENE (FOR CUSHION (F))
3-701-613-00	BAG, POLYETHYLENE (FOR SCREW ASSY)
3-703-895-01	(BLACK)....LABEL, COLOR
3-703-906-01	(SILVER)...LABEL, COLOR
3-760-415-51	(G-AEP)....MANUAL, INSTRUCTION
3-760-415-11	(AEP,UK)...MANUAL, INSTRUCTION
3-760-415-41	(AEP).....MANUAL, INSTRUCTION
3-795-571-11	INSTRUCTION
4-884-945-00	PARTITION
4-884-884-00	(ST-58)...SHEET, PROTECTION
4-884-885-11	SHEET, PROTECTION (FOR SIDE PLATE)
4-902-995-01	PARTITION
4-902-996-01	BOX, ACCESSORY
4-905-328-01	INDIVIDUAL CARTON
4-910-322-01	(APM-058)...CUSHION
4-910-323-01	(APM-058)...SHEET, PROTECTION
4-910-327-01	CUSHION, UPPER
4-910-328-01	CUSHION (FRONT), LOWER
4-910-329-01	CUSHION (REAR), LOWER
9-911-842-XX	CUSHION (F)

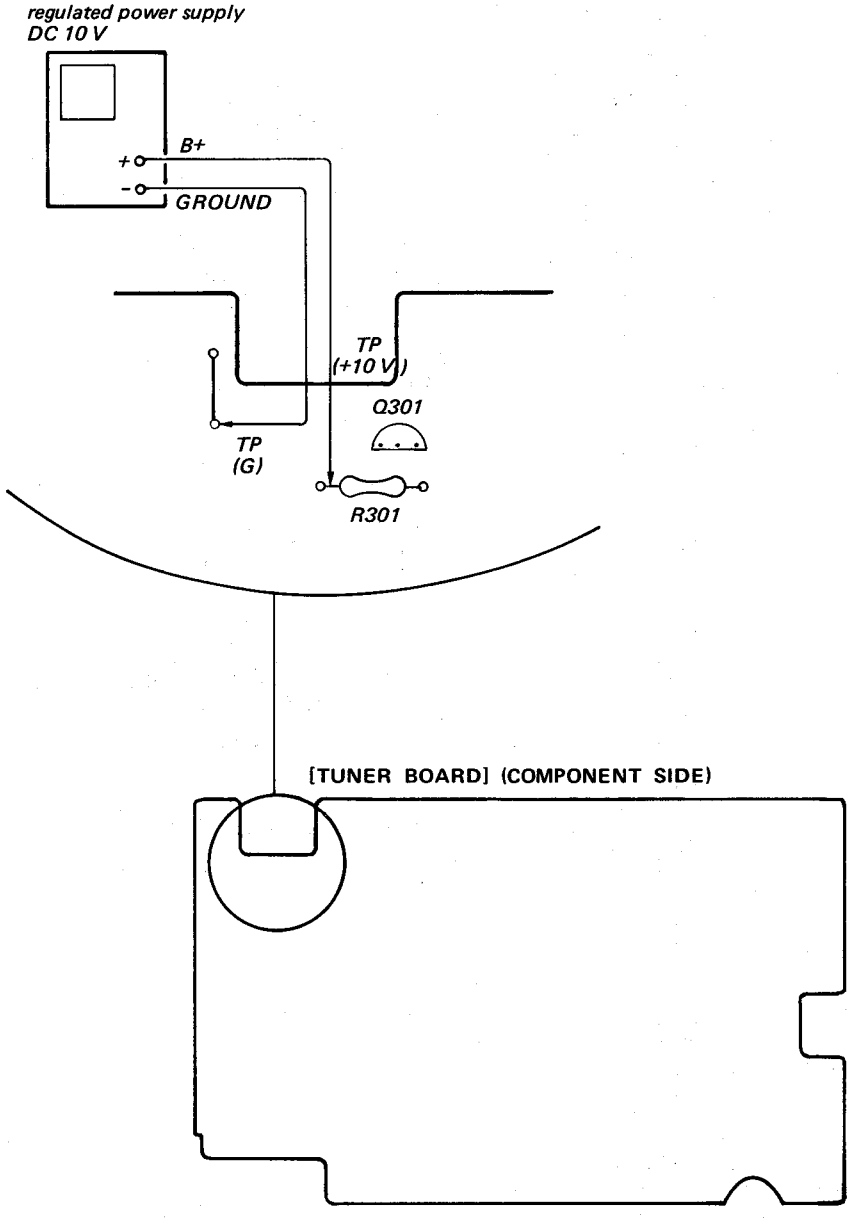
FM STEREO/FM-AM TUNER
〔ST-58〕

REPAIRING PRECAUTION

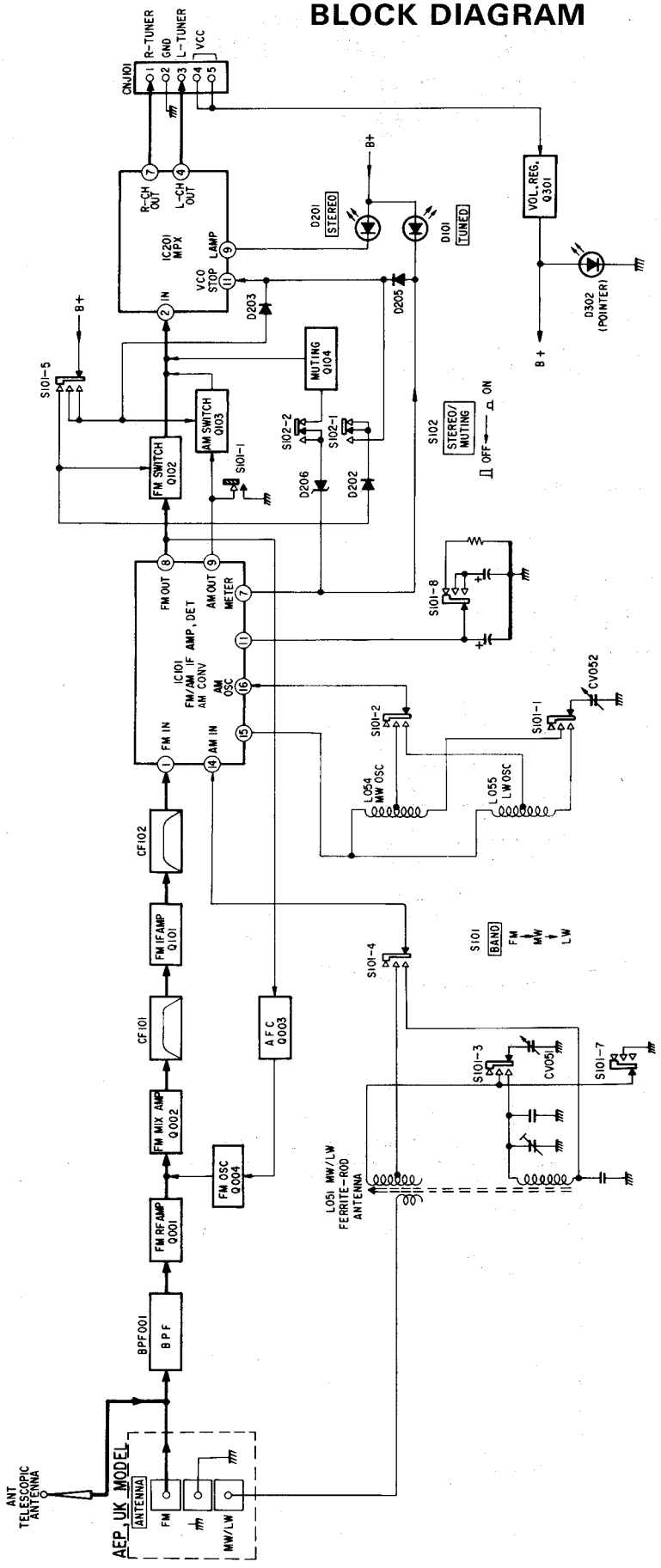
【 To apply B+ voltage 】

The power of this unit is fed from TA-58.

Because of this, connect the regulated power supply as illustrated below when this unit alone operates.



SECTION 1
BLOCK DIAGRAM



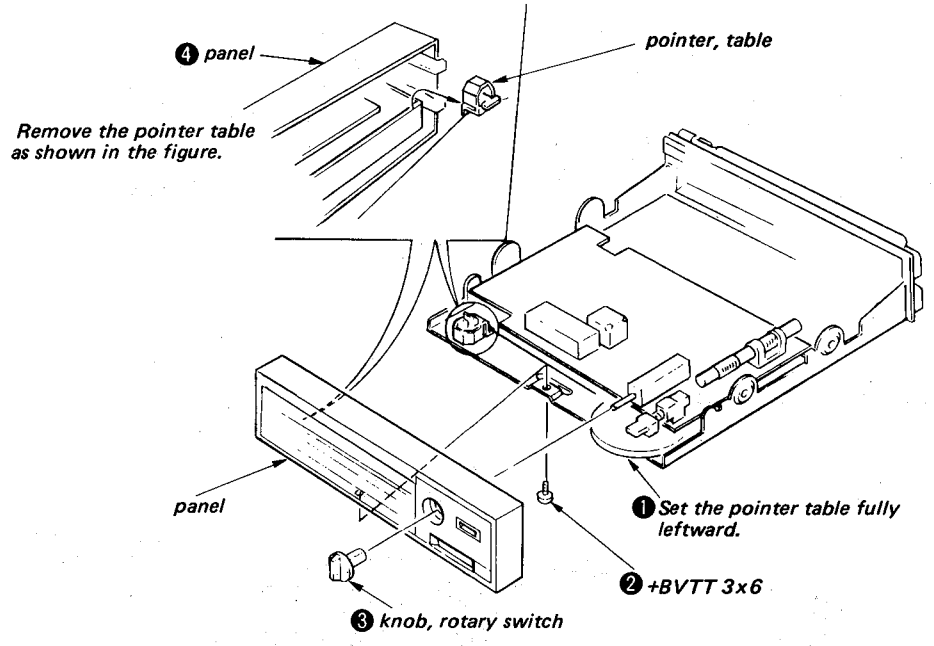
SECTION 2
DISASSEMBLY

Note: Follow the disassembly procedure in the numerical order given.

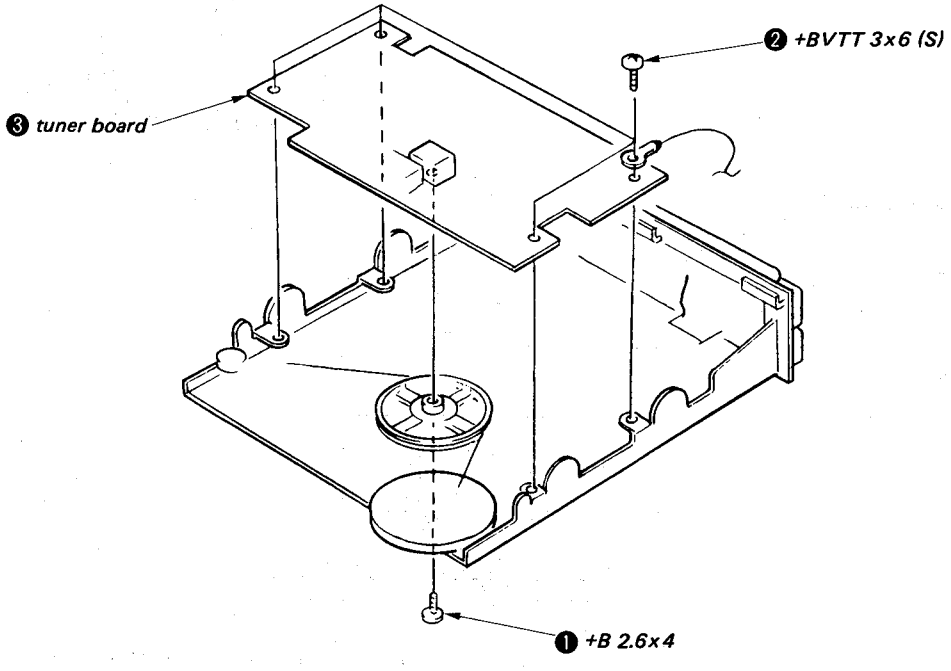
CASE REMOVAL

Remove case by taking out four screws.

PANEL REMOVAL

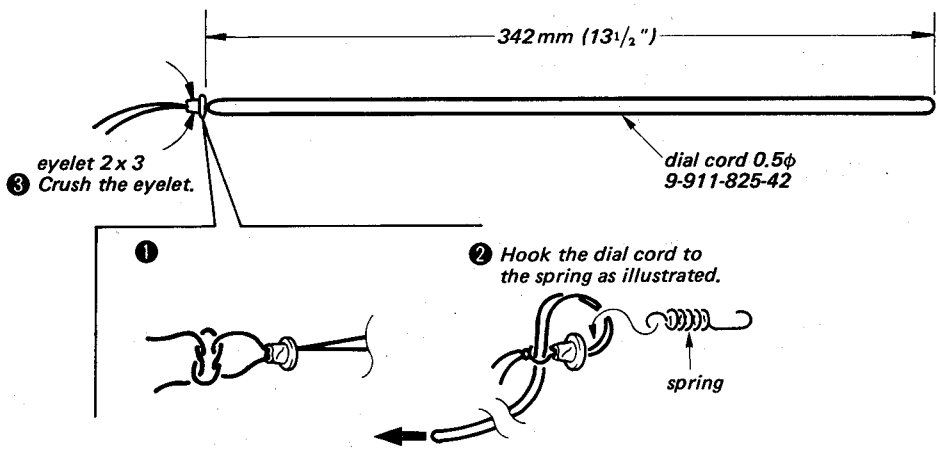


TUNER BOARD REMOVAL



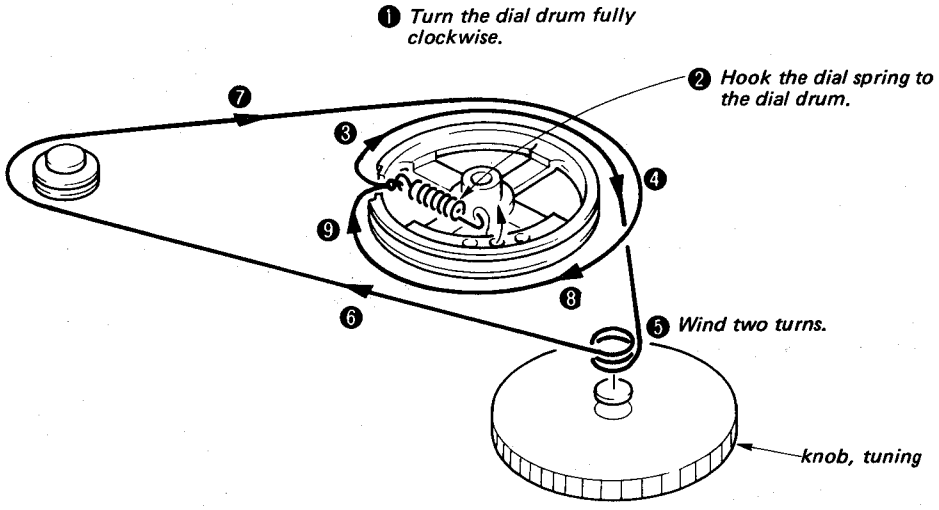
DIAL CORD STRINGING

1) Preparation

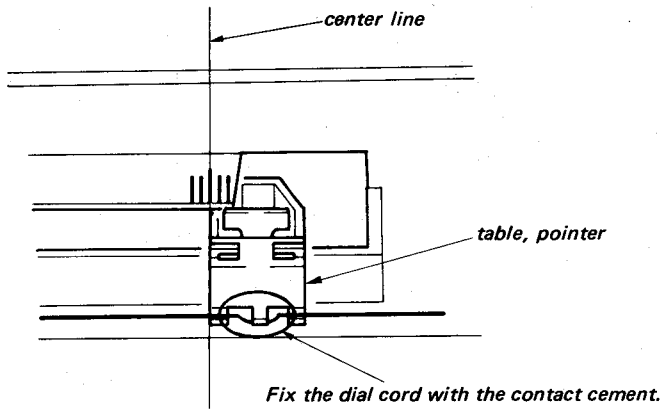


2) Stringing

- String the dial cord in the numerical order given.



3) Pointer Setting



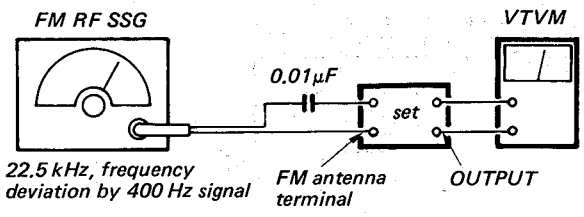
SECTION 3
ADJUSTMENTS

FM

- **Setting:**

  BAND Switch: FM
  STEREO MUTING Switch: OFF

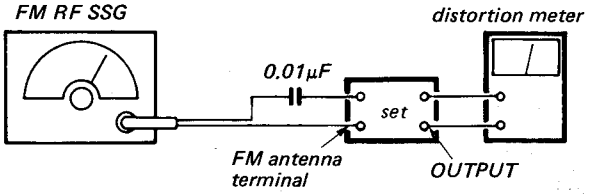
- **Procedure:**



- Repeat the procedures in each adjustment several times, and the frequency coverage and tracking adjustments should be finally done by the trimmer capacitors.

FM Discriminator Adjustment

Setting:

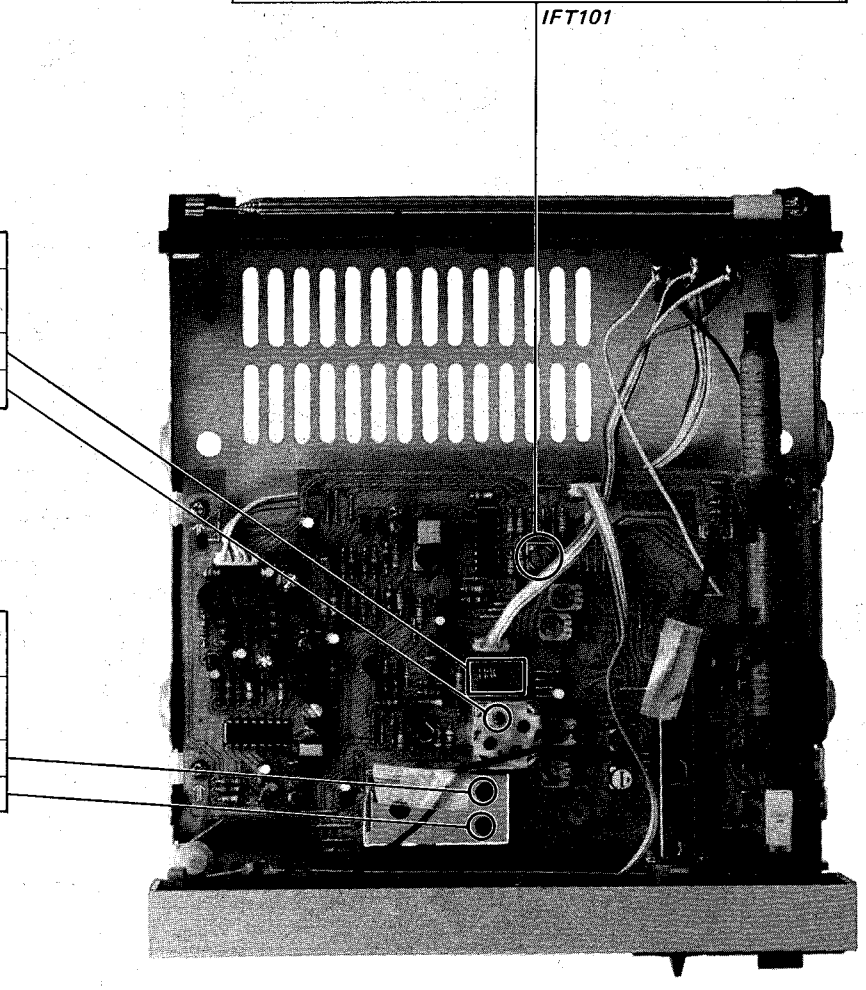


Carrier frequency:	*98 MHz*
OUTPUT level:	*1 mV (60 dB)*
Modulation:	*400 Hz, 40 kHz deviation (100%)*
Mode:	*MONO*

1. Tune the set to 98 MHz.
2. Adjust IFT101 for a minimum reading on the distortion meter.

FM TRACKING ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
87.1 MHz	L001
109.5 MHz	CT001

FM FREQUENCY COVERAGE ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
109.5 MHz	CT002
87.1 MHz	L003



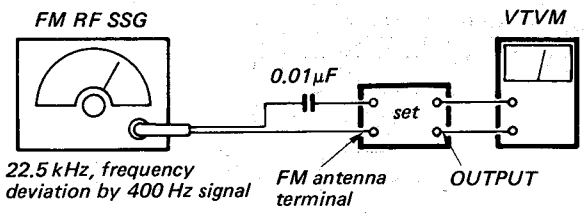
SECTION 3
ADJUSTMENTS

FM

- **Setting:**

  BAND Switch: FM
  STEREO MUTING Switch: OFF

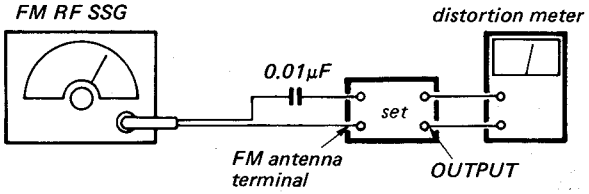
- **Procedure:**



- Repeat the procedures in each adjustment several times, and the frequency coverage and tracking adjustments should be finally done by the trimmer capacitors.

FM Discriminator Adjustment

Setting:

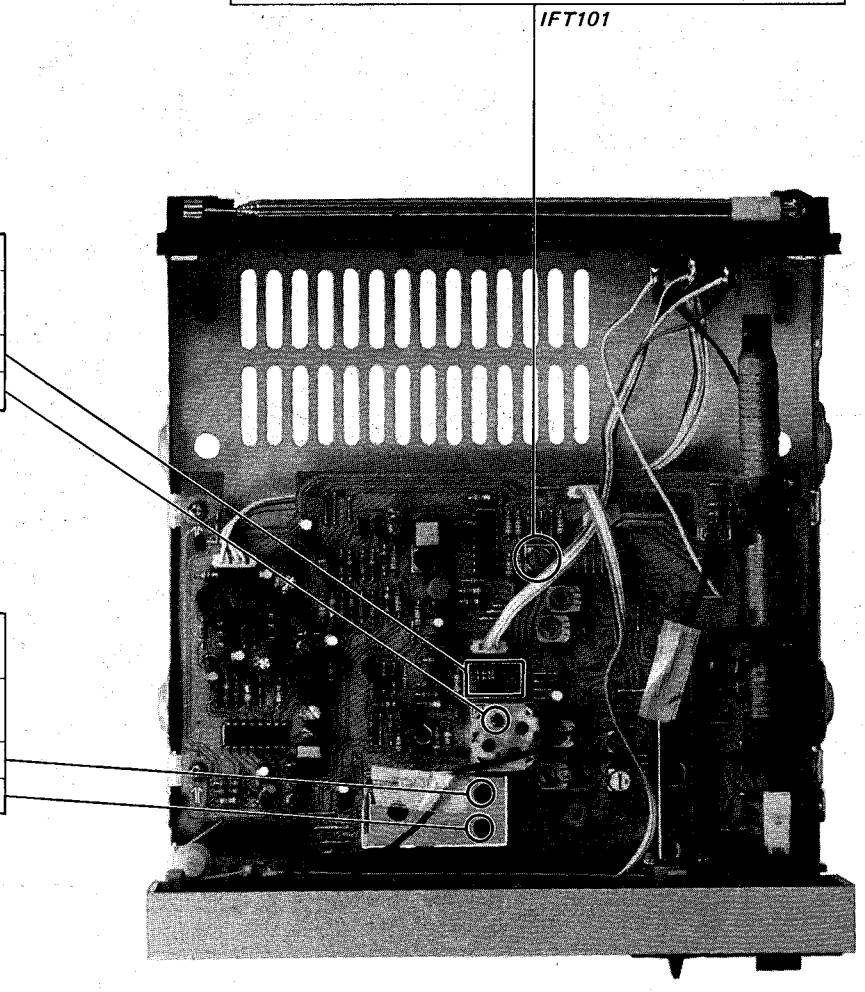


Carrier frequency:	*98 MHz*
OUTPUT level:	*1 mV (60 dB)*
Modulation:	*400 Hz, 40 kHz deviation (100%)*
Mode:	*MONO*

1. Tune the set to 98 MHz.
2. Adjust IFT101 for a minimum reading on the distortion meter.

FM TRACKING ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
87.1 MHz	L001
109.5 MHz	CT001

FM FREQUENCY COVERAGE ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
109.5 MHz	CT002
87.1 MHz	L003

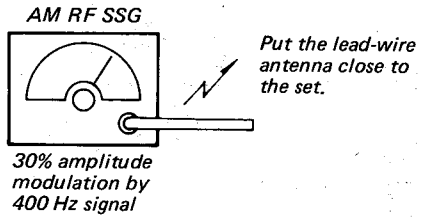


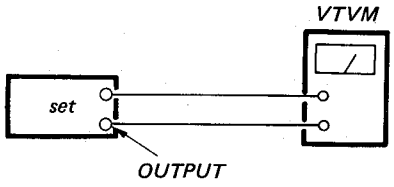
MW

- **Setting:**

  BAND Switch: MW

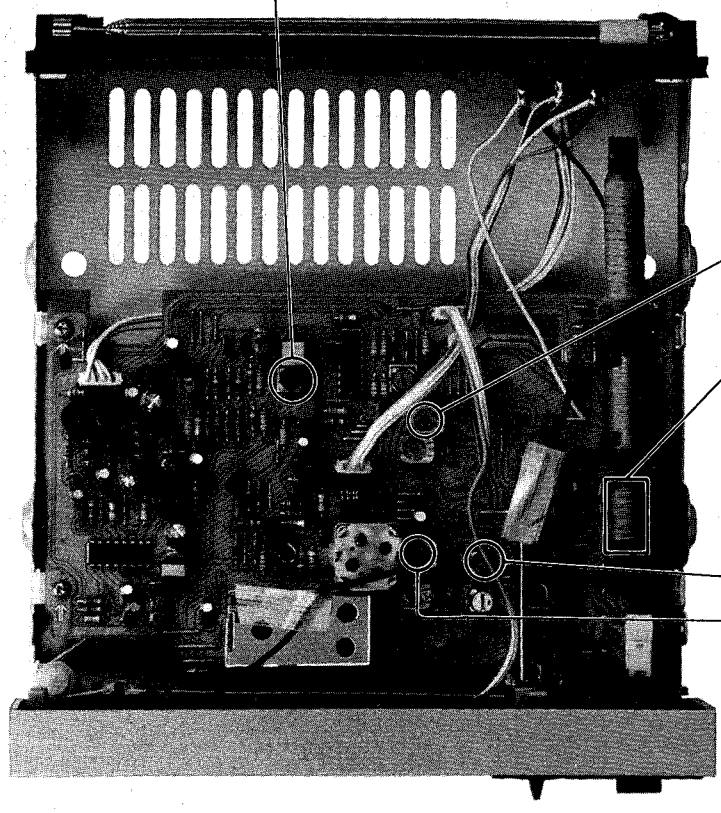
- **Procedure:**





- Repeat the procedures in each adjustment several times, and the frequency coverage and tracking adjustments should be finally done by the trimmer capacitors.

AM IF ALIGNMENT	
Adjust for a maximum reading on VTVM.	
IFT051	1,000 kHz



MW TRACKING ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
CT051	1,400 kHz
L051-1	600 kHz

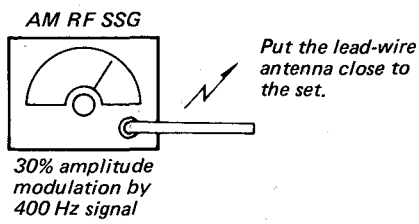
MW FREQUENCY COVERAGE ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
L054	515 kHz
CT054	1,660 kHz

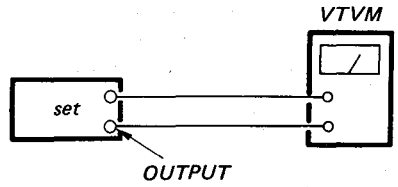
LW

- **Setting:**

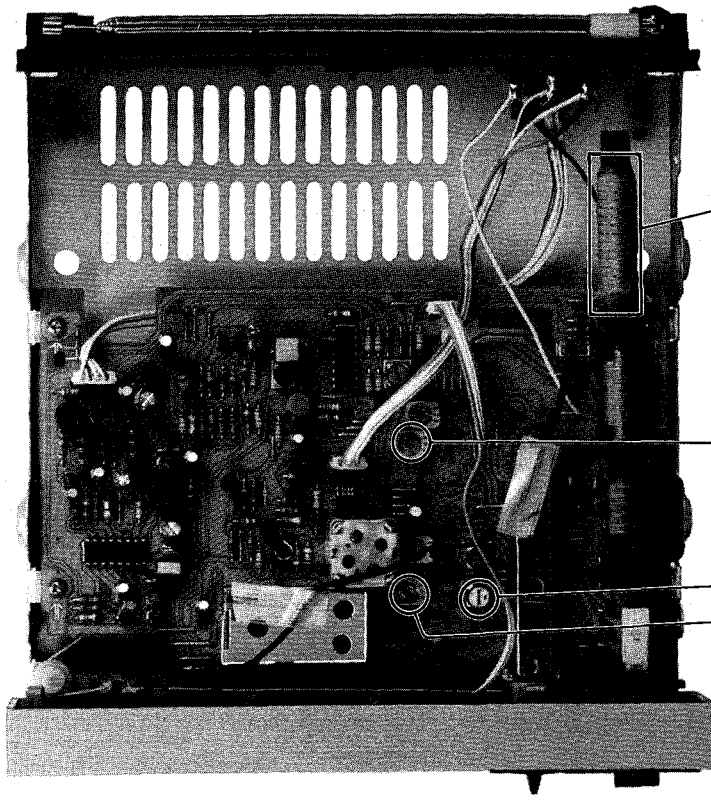
  BAND Switch: LW

- **Procedure:**





- Repeat the procedures in each adjustment several times, and the frequency coverage and tracking adjustments should be finally done by the trimmer capacitors.



LW TRACKING ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
L051-2	170 kHz
CT052	310 kHz

LW FREQUENCY COVERAGE ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
L055	145 kHz
CT055	365 kHz

MEMO

SECTION 4 DIAGRAMS

- **Semiconductor Lead Layouts**

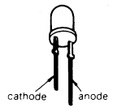
1SS202-1
RD6.8E-N3
EQA01-05R



2SC710-14



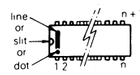
SLR-54MC3
SLH-54VC3
SLR-40DC3



2SC2458



LA1260C
LA3410

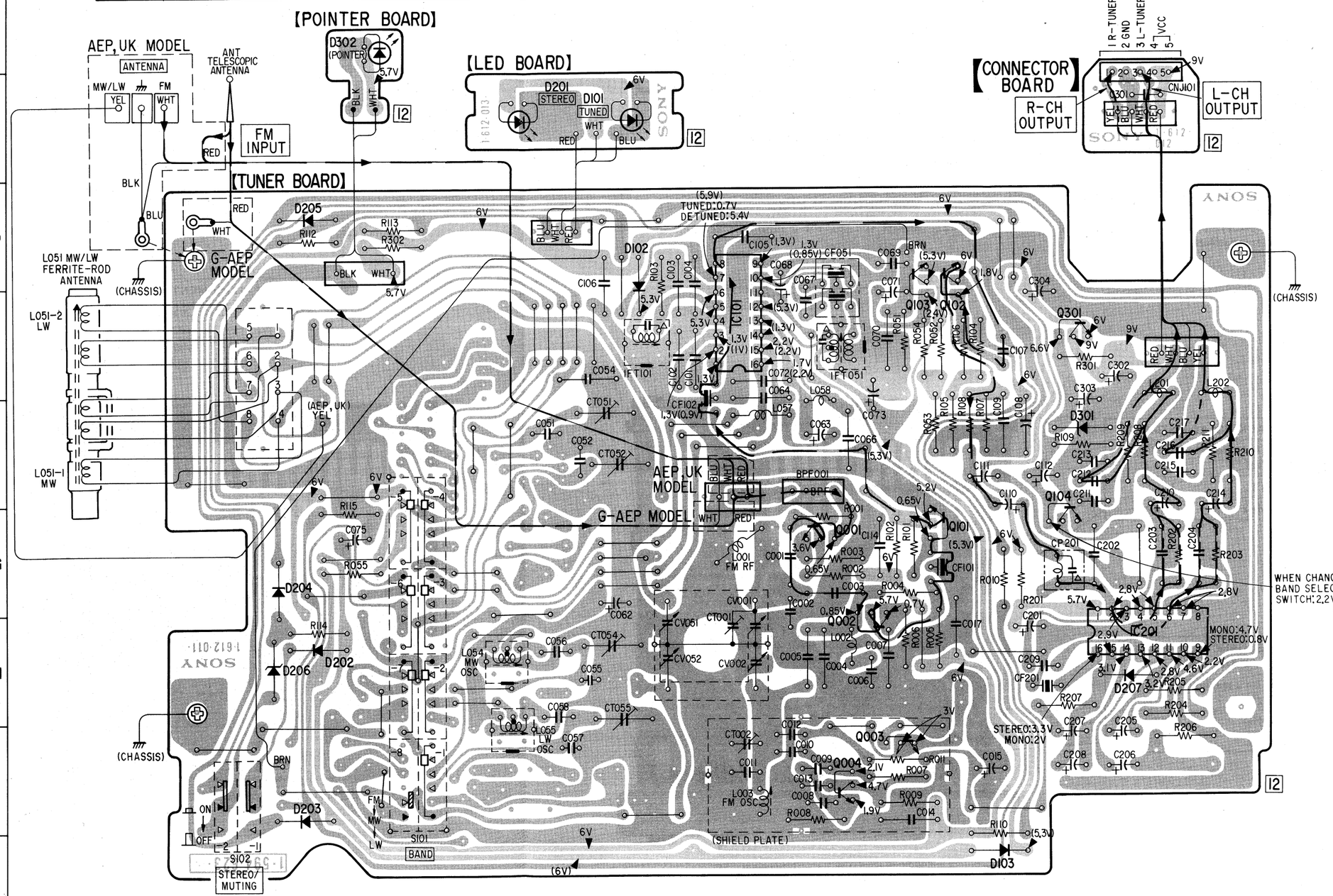


2SD774



4-1. MOUNTING DIAGRAM

Q · IC	IC101 001 002 004 003 103 101 102 301 104 IC201
D	204 205 206 202 203 302 201 101 102 103 301 207



Note:

- ○— : parts extracted from the component side.
- [ ]— : indicates side identified with part number.
- ▒▒ : B + pattern
- ▬▶▬ : signal path
- ▬▶ : L-CH signal path
- ▬·▶ : R-CH signal path

4-2. SCHEMATIC DIAGRAM

【TUNER BOARD】

ANT TELESCOPIC ANTENNA

AEP,UK MODEL
ANTENNA
FM
MW/LW

BPF001 BPF

Q001 2SC710 FM RF AMP
Q002 2SC710 FM MIX AMP
Q101 2SC710 FM IF AMP
Q003 2SC710 AFC
Q004 2SC710 FM OSC

IC101 LA1260C FM/AM IF AMP, DET AM CONV
FM IF
QUADRATURE DET
AM RF
MIX
OSC
REG
AM IF
DET
AGC, SIGNAL METER
TUNING METER

D102 ISS202
D103 ISS202
D202,204 ISS202
D206 EQA01-15
D203,205 ISS202
D207 ISS202
Q102,103 2SC945 FM/AM SWITCH
Q104 2SC945 MUTING

IC201 LA3410 MPX
DECODER
PHASE COMPARATOR
OSC CONTROL CIRCUIT
VCO STOP
OSC
FF 228kHz
FF 76kHz
FF 38kHz
FF 19kHz ∠90°
FF 19kHz ∠0°

S101 BAND FM MW LW
S101-1 S101-2 S101-3 S101-4 S101-5 S101-6 S101-7 S101-8
S102-1 STEREO/MUTING OFF ON
S102-2 STEREO/MUTING OFF ON
WHEN CHANGING BAND SELECT SWITCH: 2.2V
STEREO: 3.3V MONO: 2V

L051 MW/LW FERRITE-ROD ANTENNA
L051-1 MW
L051-2 LW
L052 MW OSC
L053 LW OSC
L057 1μH
L058 47mH

IFT101
IFT051
CF101 CF102 CF051 CF201

CT001 CT002 CT051 CT052 CT054 CT055
CV001 CV002 CV051 CV052

IC101 LA1260C
FM/AM IF AMP, DET
AM CONV

DI02 ISS202
DI03 ISS202
IC201 LA3410
MPX
D203,205 ISS202
D202,204 ISS202
D206 EQA01-15
D207 ISS202
Q102,103 2SC945 FM/AM SWITCH
Q104 2SC945 MUTING
Q301 2SD789 VOL.REG.
D201 SLH-54YC3
DI01 SLR-54MC3
D301 HZ7A3L
D302 SLR-40DC3

FM BAND
MW
LW

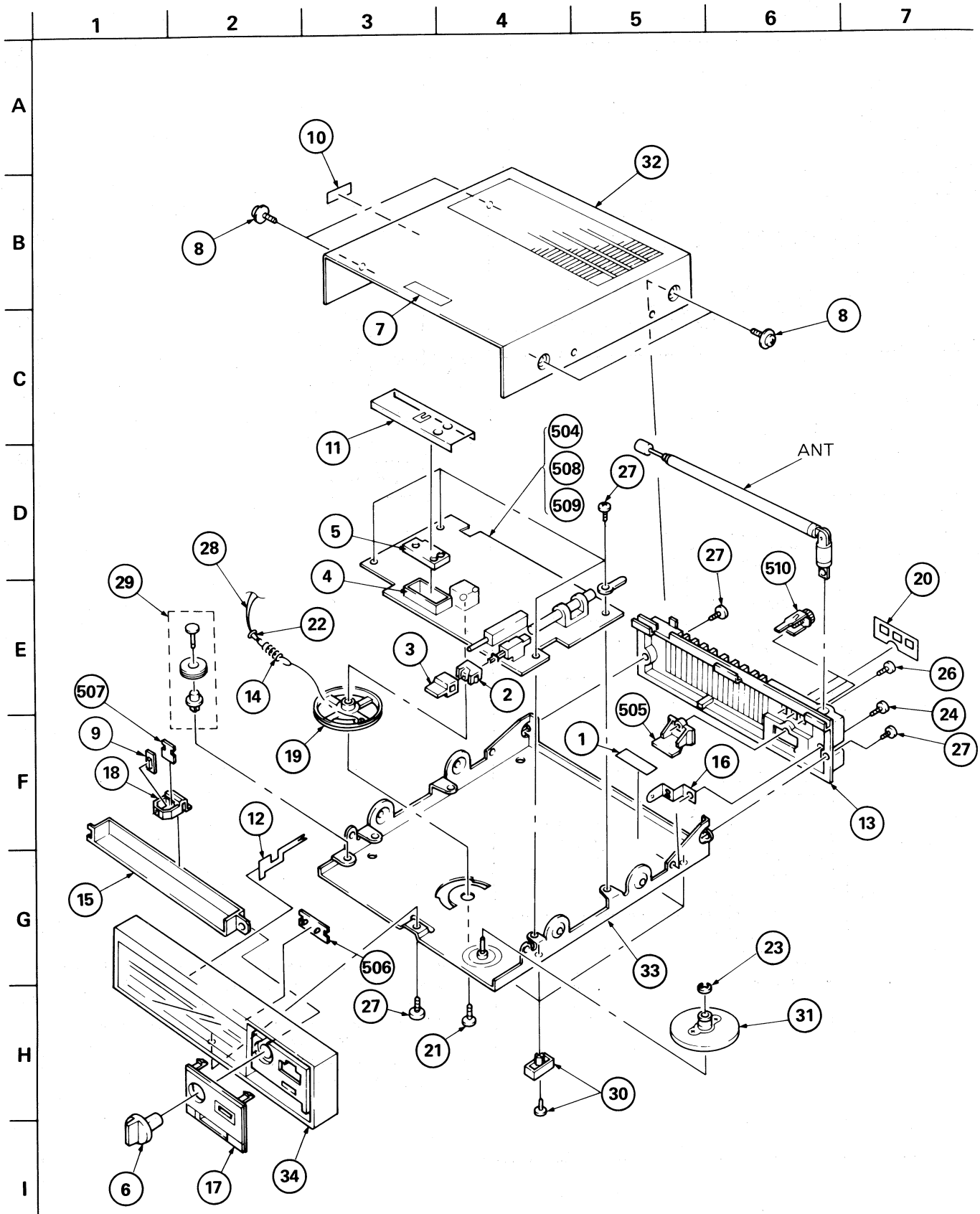
FM . IF
QUADRATURE DET
AM RF
MIX
REG
OSC
AM. IF
DET
AGC . SIGNAL METER
TUNING METER
DECODER
VOL.REG.
POST AMP
POST AMP
FF 228kHz
FF 76kHz
FF 38kHz
FF 19kHz ∠90°
FF 19kHz ∠0°
STEREO SWITCH
PHASE COMPARATOR
PILOT DET
LAMP TRIGGER
LAMP DRIVER
OSC CONTROL CIRCUIT
OSC
VCO STOP
STEREO/MUTING
WHEN CHANGING BAND SELECT SWITCH: 2.2V
STEREO: 3.3V
MONO: 2V
MONO: 4.7V
STEREO: 0.8V
TUNED: 0.7V
DETUNED: 5.4V

【LED BOARD】
【POINTER BOARD】
【CONNECTOR BOARD】
CNJ101
R-TUNER
GND
L-TUNER
VCC

Note:

- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in ohms, 1/4W unless otherwise noted. kΩ : 1000 Ω, MΩ : 1000 kΩ
- △ : internal component.
- ▭ : panel designation.
- ——— : B+ bus.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken under no-signal conditions with a VOM (50 kΩ/V).
  no mark: FM
  ( ) : AM
- Voltage variations may be noted due to normal production tolerances.
- ➡ : signal path

SECTION 5
EXPLODED VIEW AND PARTS LIST



GENERAL SECTION

No.	Part No.	Description
1	3-701-030-00	LABEL, SERIAL NUMBER
2	4-864-307-00	RING
3	4-880-321-11	(BLACK)....KNOB (3X14), SQUARE
3	4-880-321-21	(SILVER)...KNOB (3X14), SQUARE
4 ♦	4-880-329-00	PLATE (E), SHIELD
5 ♦	4-880-330-00	PLATE (F), SHIELD
6	4-884-847-00	(SILVER)...KNOB (ST), ROTARY SWITCH
6	4-884-847-11	(BLACK)....KNOB (ST), ROTARY SWITCH
7	4-884-927-00	LABEL (SYSTEM), CAUTION
8	4-886-821-21	(BLACK)....SCREW, M 3 CASE STOPPER
8	4-886-821-31	(SILVER)...SCREW, M 3 CASE STOPPER
9 ♦	4-889-622-01	INDICATOR
10 ♦	4-902-323-01	(AEP,UK)...LABEL, MODEL NUMBER
10 ♦	4-905-324-01	(G-AEP)....LABEL, MODEL NUMBER
11 ♦	4-902-920-01	COVER, EDGE
12 ♦	4-902-921-01	HOLDER, LEAD WIRE
13	4-902-922-01	PLATE, JACK
14	4-902-929-01	SPRING, EXTENSION
15 ♦	4-902-933-01	RAIL, POINTER
16 ♦	4-902-935-01	TERMINAL BOARD
17	4-902-936-51	(SILVER)...PANEL, CONTROL
17	4-902-936-71	(BLACK)....PANEL, CONTROL
18 ♦	4-902-937-01	TABLE, POINTER
19 ♦	4-902-938-01	DRUM, DIAL
20	4-905-301-01	(AEP,UK)...LABEL, ANTENNA
20	4-905-302-01	(G-AEP)....LABEL, ANTENNA
21	7-621-775-10	SCREW +B 2.6X4
22	7-623-616-01	EYELET, 2X3
23	7-624-105-04	STOP RING 2.3, TYPE -E
24	7-682-548-09	SCREW +B 3X8
25	.....	
26	7-685-646-11	SCREW +BVTP 3X8 TYPE2 N-S
27	7-685-871-01	SCREW +BVTT 3X6 (S)
28	9-911-825-42	STRING, 0.5MM WHITE
29	X-4856-325-0	PULLEY ASSY
30	X-4902-937-1	FOOT ASSY, RUBBER
31	X-4902-902-1	(SILVER)...KNOB ASSY, TG
31	X-4902-910-1	(BLACK)....KNOB ASSY, TG
32	X-4902-904-1	(BLACK)....CASE ASSY
32	X-4902-905-1	(SILVER)...CASE ASSY
33 ♦	X-4902-906-1	CHASSIS ASSY

GENERAL SECTION

No.	Part No.	Description
34	X-4902-941-1	(G-AEP:SILVER)....PANEL ASSY
34	X-4902-941-2	(G-AEP:BLACK).....PANEL ASSY
34	X-4902-943-1	(AEP,UK:SILVER)...PANEL ASSY
34	X-4902-943-2	(AEP,UK:BLACK)....PANEL ASSY

NOTE:

- The mechanical parts with no reference number in the exploded views are not supplied.
- Items marked " ♦ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part numbers (Δ-ΔΔΔ-ΔΔΔ-XX or Δ-ΔΔΔΔ-ΔΔΔ-X) may be different from those used in the set.
- If there are two or more same circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

CAPACITORS:

- All capacitors are in μF. Common capacitors are omitted. Refer to the following lists for their part numbers. MF:μF, PF:μμF.

COILS

- MMH : mH, UH : μH

SEMICONDUCTORS

In each case, U : μ, for example:
UA···: μA···, UPA···: μPA···, UPC···: μPC, UPD···: μPD···

ELECTRICAL PARTS

Ref.No.	Part No.	Description
501 ♦	;1-535-139-00	BASE POST 19MM (10MM PITCH) 2P
502 ♦	;1-562-249-00	SOCKET, CONNECTOR 4P
503 ♦	;1-562-327-00	SOCKET, CONNECTOR 3P
504 ♦	;1-612-011-11	PC BOARD, TUNER
505 ♦	;1-612-012-11	PC BOARD, CONNECTOR
506 ♦	;1-612-013-11	PC BOARD, LED
507 ♦	;1-612-014-11	PC BOARD, POINTER
508 ♦	;A-4351-449-A	(AEP,UK)...MOUNTED PCB, TUNER
509 ♦	;A-4351-450-A	(G-AEP)....MOUNTED PCB, TUNER
510	1-536-742-00	(AEP,UK)...TERMINAL BOARD, ANTENNA
ANT	1-501-270-00	ANTENNA, TELESCOPIC
BPF001	1-231-720-00	FILTER, BANDPASS

C001	1-161-255-00	CERAMIC	4.7PF	10%	50V
C002	1-102-959-00	CERAMIC	22PF	5%	50V
C003	1-161-251-00	CERAMIC	2.2PF	10%	50V
C004	1-161-263-00	CERAMIC	22PF	5%	50V
C005	1-161-247-00	CERAMIC	1PF	20%	50V
C006	1-102-121-00	CERAMIC	0.0022MF	10%	50V
C007	1-161-494-00	CERAMIC	0.022MF	30%	25V
C008	1-102-684-00	CERAMIC	8PF	0.5PF	50V
C009	1-102-806-00	CERAMIC	27PF	5%	50V
C010	1-102-684-00	CERAMIC	8PF	0.5PF	50V
C011	1-102-672-00	(AEP,UK)...CERAMIC	24PF	5%	50V
C011	1-102-883-00	(G-AEP)....CERAMIC	27PF	5%	50V
C012	1-102-935-00	CERAMIC	2PF	0.25PF	50V
C013	1-101-005-00	CERAMIC	0.022MF		50V
C014	1-161-494-00	CERAMIC	0.022MF	30%	25V
C015	1-123-379-00	ELECT	0.47MF	20%	50V
C017	1-161-494-00	CERAMIC	0.022MF	30%	25V
C051	1-102-942-00	CERAMIC	5PF	0.5PF	50V
C052	1-102-935-00	CERAMIC	2PF	0.25PF	50V
C054	1-161-321-00	CERAMIC	680PF	10%	50V
C055	1-102-262-00	CERAMIC	12PF	5%	50V
C056	1-104-066-00	POLYSTYRENE	360PF	5%	50V
C057	1-102-852-00	CERAMIC	47PF	5%	50V
C058	1-103-701-00	POLYSTYRENE	100PF	5%	50V
C062	1-123-356-00	ELECT	10MF	20%	50V
C063	1-123-379-00	ELECT	0.47MF	20%	50V
C064	1-161-494-00	CERAMIC	0.022MF	30%	25V
C066	1-161-494-00	CERAMIC	0.022MF	30%	25V
C067	1-101-880-00	CERAMIC	47PF	5%	50V
C068	1-123-380-00	ELECT	1MF	20%	50V
C069	1-136-163-00	MYLAR	0.068MF	10%	50V
C070	1-161-330-00	CERAMIC	0.01MF	30%	25V
C071	1-123-379-00	ELECT	0.47MF	20%	50V
C072	1-161-255-00	CERAMIC	4.7PF	10%	50V

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
C073	1-123-356-00	ELECT	10MF	20%	50V
C075	1-123-330-00	ELECT	22MF	20%	16V
C101	1-161-494-00	CERAMIC	0.022MF	30%	25V
C102	1-161-494-00	CERAMIC	0.022MF	30%	25V
C103	1-161-494-00	CERAMIC	0.022MF	30%	25V
C104	1-161-494-00	CERAMIC	0.022MF	30%	25V
C105	1-161-319-00	CERAMIC	470PF	10%	50V
C106	1-161-494-00	CERAMIC	0.022MF	30%	25V
C107	1-124-183-00	ELECT	2.2MF	20%	50V
C108	1-123-307-00	ELECT	100MF	20%	10V
C109	1-161-319-00	CERAMIC	470PF	10%	50V
C110	1-123-356-00	ELECT	10MF	20%	50V
C111	1-123-307-00	ELECT	100MF	20%	10V
C112	1-123-332-00	ELECT	47MF	20%	16V
C114	1-161-494-00	CERAMIC	0.022MF	30%	25V
C201	1-123-332-00	ELECT	47MF	20%	16V
C202	1-161-319-00	CERAMIC	470PF	10%	50V
C203	1-161-318-00	CERAMIC	390PF	10%	50V
C204	1-161-318-00	CERAMIC	390PF	10%	50V
C205	1-123-380-00	ELECT	1MF	20%	50V
C206	1-123-356-00	ELECT	10MF	20%	50V
C207	1-123-382-00	ELECT	3.3MF	20%	50V
C208	1-123-608-00	ELECT	0.22MF	20%	50V
C209	1-101-006-00	CERAMIC	0.047MF		50V
C210	1-123-380-00	ELECT	1MF	20%	50V
C211	1-102-127-00	CERAMIC	0.0068MF	10%	50V
C212	1-102-127-00	CERAMIC	0.0068MF	10%	50V
C213	1-102-127-00	CERAMIC	0.0068MF	10%	50V
C214	1-123-380-00	ELECT	1MF	20%	50V
C215	1-102-127-00	CERAMIC	0.0068MF	10%	50V
C216	1-102-127-00	CERAMIC	0.0068MF	10%	50V
C217	1-102-127-00	CERAMIC	0.0068MF	10%	50V
C302	1-123-356-00	ELECT	10MF	20%	50V
C303	1-123-333-00	ELECT	100MF	20%	16V
C304	1-123-356-00	ELECT	10MF	20%	50V
CF051	1-527-937-00	FILTER, CERAMIC			
CF101	1-527-964-00	FILTER, CERAMIC			
CF102	1-527-964-00	FILTER, CERAMIC			
CF201	1-567-250-11	OSCILLATOR, CERAMIC			
CNJ101	1-562-067-00	SOCKET, CONNECTOR 5P			
CP201	1-235-046-00	ENCAPSULATED COMPONENT (B.E.F)			

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COILS

- MMH : mH, UH : μH

SEMICONDUCTORS

In each case, U : μ, for example:
UA···: μA···, UPA···: μPA···, UPC···: μPC,
UPD···: μPD···

ELECTRICAL PARTS

Ref.No.	Part No.	Description
CT001	1-151-440-00	CAP, TUNING, POLYETHYLENE
CT002	1-141-263-11	CAP, TRIMMER
CT051	1-141-179-12	CAP, TRIMMER
CT052	1-141-179-12	CAP, TRIMMER
CT054	1-141-179-12	CAP, TRIMMER
CT055	1-141-179-12	CAP, TRIMMER
CV001	1-151-440-00	CAP, TUNING, POLYETHYLENE
CV002	1-151-440-00	CAP, TUNING, POLYETHYLENE
CV051	1-151-440-00	CAP, TUNING, POLYETHYLENE
CV052	1-151-440-00	CAP, TUNING, POLYETHYLENE
D101	8-719-908-50	DIODE SLR-54MC3
D102	8-719-107-94	DIODE 1SS202-1
D103	8-719-107-94	DIODE 1SS202-1
D201	8-719-904-08	DIODE SLH-54VC3
D202	8-719-107-94	DIODE 1SS202-1
D203	8-719-107-94	DIODE 1SS202-1
D204	8-719-107-94	DIODE 1SS202-1
D205	8-719-107-94	DIODE 1SS202-1
D206	8-719-936-05	DIODE EQA01-05R
D207	8-719-107-94	DIODE 1SS202-1
D301	8-719-102-79	DIODE RD6.8E-N3
D302	8-719-920-25	DIODE SLR-40DC3
IC101	8-759-801-37	IC LA1260C
IC201	8-759-800-90	IC LA3410
IFT051	1-404-413-00	TRANSFORMER, IF
IFT101	1-404-534-11	TRANSFORMER, IF
L001 ♦	1-420-884-00	COIL, AIR CORE
L002 ♦	1-420-840-00	COIL
L003	1-459-412-00	COIL (WITH CORE)
L051	1-402-094-11	ANTENNA, FERRITE-ROD (LW/MW)
L052	1-402-094-11	ANTENNA, FERRITE-ROD (LW/MW)
L054	1-406-065-00	COIL (OSC)
L055	1-405-921-00	COIL, OSCILLATOR
L057	1-408-551-00	MICRO INDUCTOR 1UH
L058	1-408-224-00	MICRO INDUCTOR 47MMH
L201	1-408-257-00	MICRO INDUCTOR 10MMH
L202	1-408-257-00	MICRO INDUCTOR 10MMH
Q001	8-729-671-14	TRANSISTOR 2SC710-14
Q002	8-729-671-14	TRANSISTOR 2SC710-14
Q003	8-729-671-14	TRANSISTOR 2SC710-14
Q004	8-729-671-14	TRANSISTOR 2SC710-14
Q101	8-729-671-14	TRANSISTOR 2SC710-14
Q102	8-729-245-83	TRANSISTOR 2SC2458
Q103	8-729-245-83	TRANSISTOR 2SC2458
Q104	8-729-245-83	TRANSISTOR 2SC2458
Q301	8-729-177-43	TRANSISTOR 2SD774

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
R001	1-246-535-00	CARBON	390K	5%	1/4W
R002	1-246-485-00	CARBON	3.3K	5%	1/4W
R003	1-247-696-00	CARBON	47	5%	1/4W
R004	1-246-539-00	CARBON	560K	5%	1/4W
R005	1-246-462-00	CARBON	360	5%	1/4W
R006	1-247-131-00	CARBON	1K	5%	1/4W
R007	1-246-525-00	CARBON	150K	5%	1/4W
R008	1-247-135-00	CARBON	1.5K	5%	1/4W
R009	1-246-483-00	CARBON	2.7K	5%	1/4W
R010	1-246-537-00	CARBON	470K	5%	1/4W
R011	1-247-179-00	CARBON	100K	5%	1/4W
R051	1-247-147-00	CARBON	4.7K	5%	1/4W
R052	1-247-161-00	CARBON	18K	5%	1/4W
R053	1-246-505-00	CARBON	22K	5%	1/4W
R054	1-247-179-00	CARBON	100K	5%	1/4W
R055	1-247-111-00	CARBON	150	5%	1/4W
R101	1-246-529-00	CARBON	220K	5%	1/4W
R102	1-246-462-00	CARBON	360	5%	1/4W
R103	1-247-151-00	CARBON	6.8K	5%	1/4W
R104	1-247-161-00	CARBON	18K	5%	1/4W
R105	1-246-505-00	CARBON	22K	5%	1/4W
R106	1-247-179-00	CARBON	100K	5%	1/4W
R107	1-247-161-00	CARBON	18K	5%	1/4W
R108	1-247-155-00	CARBON	10K	5%	1/4W
R109	1-247-171-00	CARBON	47K	5%	1/4W
R110	1-246-483-00	CARBON	2.7K	5%	1/4W
R112	1-246-462-00	CARBON	360	5%	1/4W
R113	1-247-131-00	CARBON	1K	5%	1/4W
R114	1-247-717-00	CARBON	2.2K	5%	1/4W
R115	1-247-174-00	CARBON	62K	5%	1/4W
R201	1-246-433-00	CARBON	22	5%	1/4W
R202	1-246-523-00	CARBON	120K	5%	1/4W
R203	1-246-523-00	CARBON	120K	5%	1/4W
R204	1-246-471-00	CARBON	820	5%	1/4W
R205	1-247-133-00	CARBON	1.2K	5%	1/4W
R206	1-247-159-00	CARBON	15K	5%	1/4W
R207	1-247-147-00	CARBON	4.7K	5%	1/4W
R208	1-247-135-00	CARBON	1.5K	5%	1/4W
R209	1-247-151-00	CARBON	6.8K	5%	1/4W
R210	1-247-135-00	CARBON	1.5K	5%	1/4W
R211	1-247-151-00	CARBON	6.8K	5%	1/4W
R301	1-247-115-00	CARBON	220	5%	1/4W
R302	1-246-455-00	CARBON	180	5%	1/4W
S101	1-554-759-11	SWITCH, ROTARY SLIDE (BAND)			
S102	1-554-428-00	SWITCH, PUSH (1 KEY)(STEREO/MUTING)			

NOTE:

- The mechanical parts with no reference number in the exploded views are not supplied.
- Items marked " ♦ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part numbers (Δ-ΔΔΔ-ΔΔΔ-XX or Δ-ΔΔΔΔ-ΔΔΔ-X) may be different from those used in the set.
- If there are two or more same circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

CAPACITORS:

- All capacitors are in μF. Common capacitors are omitted. Refer to the following lists for their part numbers. MF:μF, PF:μμF.

COILS

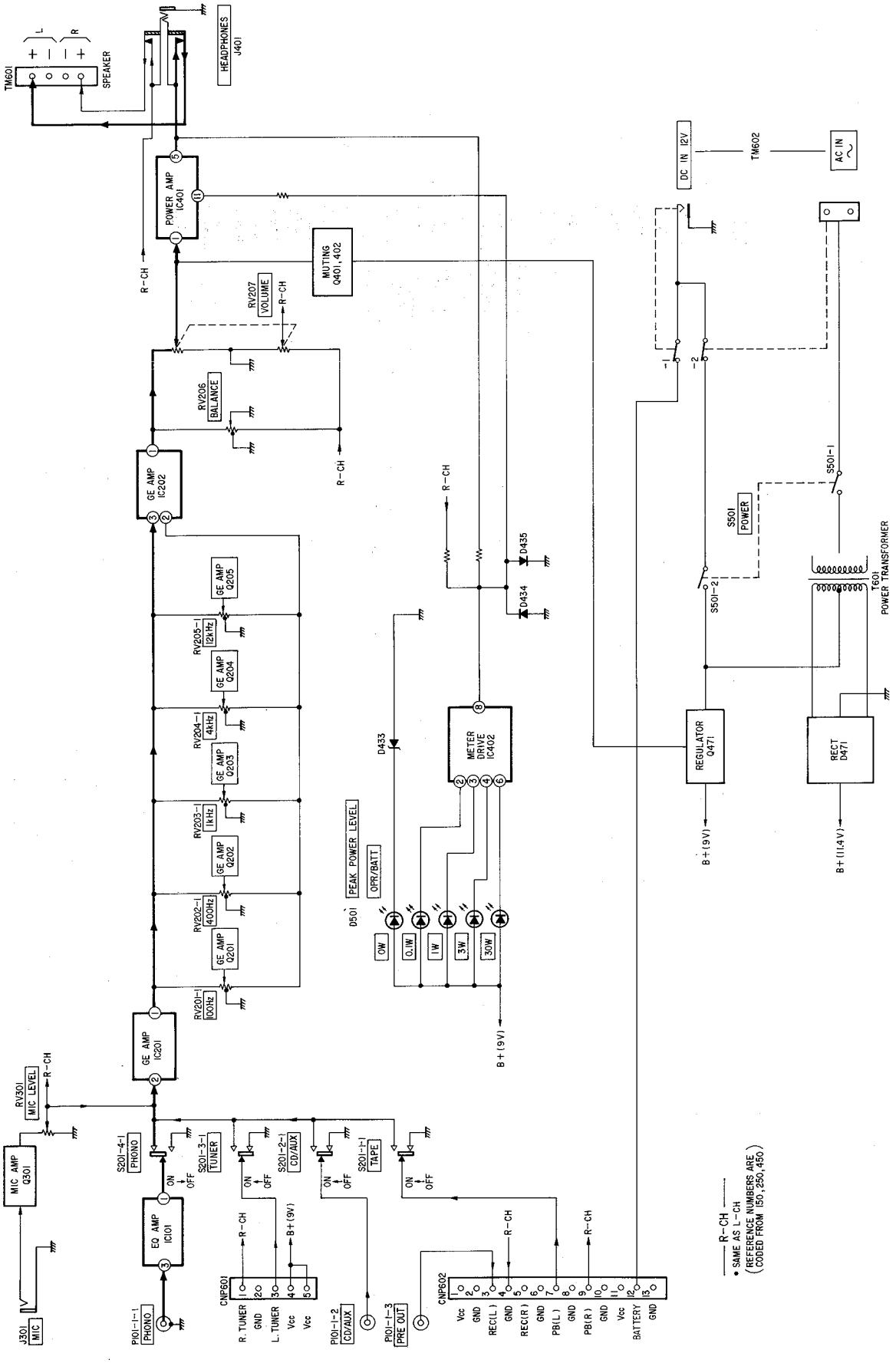
- MMH : mH, UH : μH

SEMICONDUCTORS

In each case, U : μ, for example:
UA···: μA···, UPA···: μPA···, UPC···: μPC,
UPD···: μPD···

INTEGRATED STEREO AMPLIFIER
〔TA-58〕

SECTION 1
BLOCK DIAGRAM



SECTION 2
DISASSEMBLY

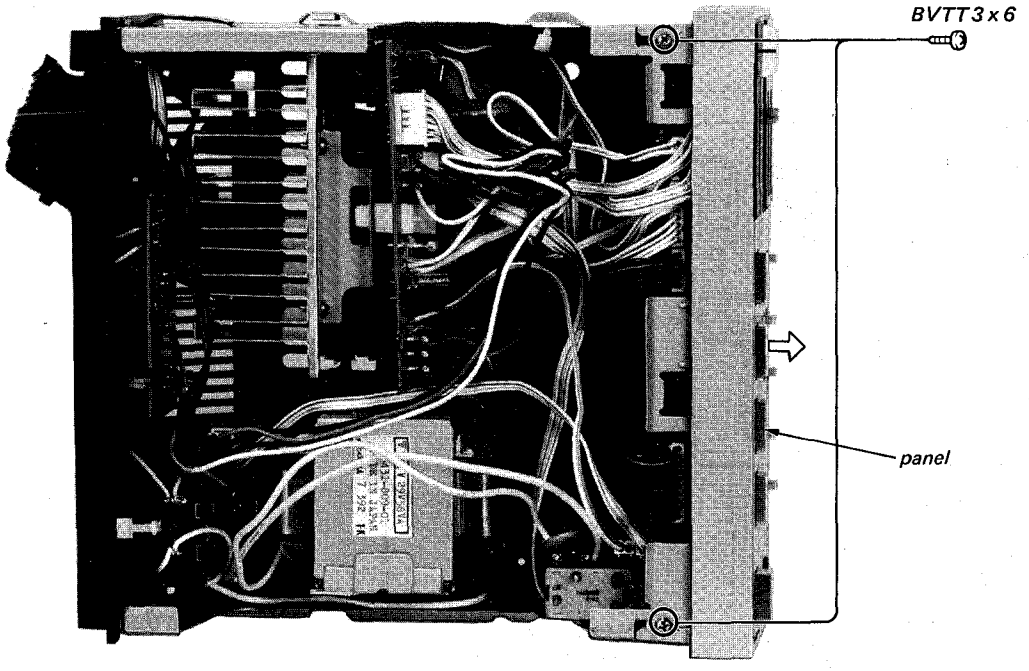
2-1. DISASSEMBLY

Note: Follow the disassembly procedure in the numerical order given.

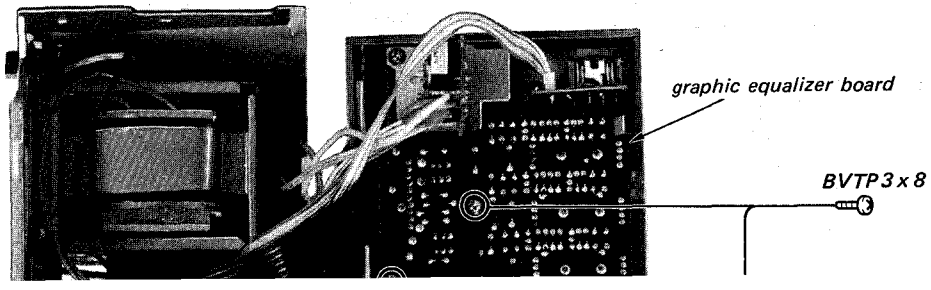
CASE

Remove four case screws.

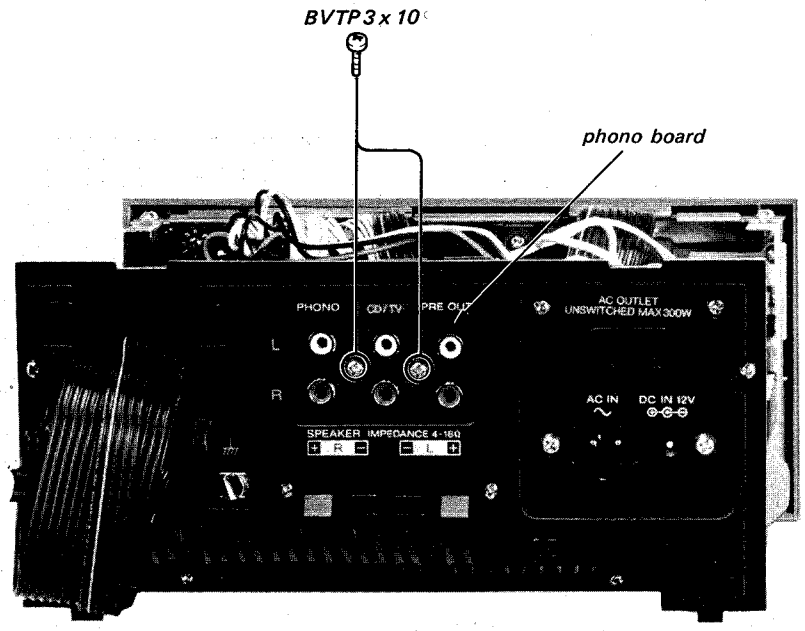
PANEL



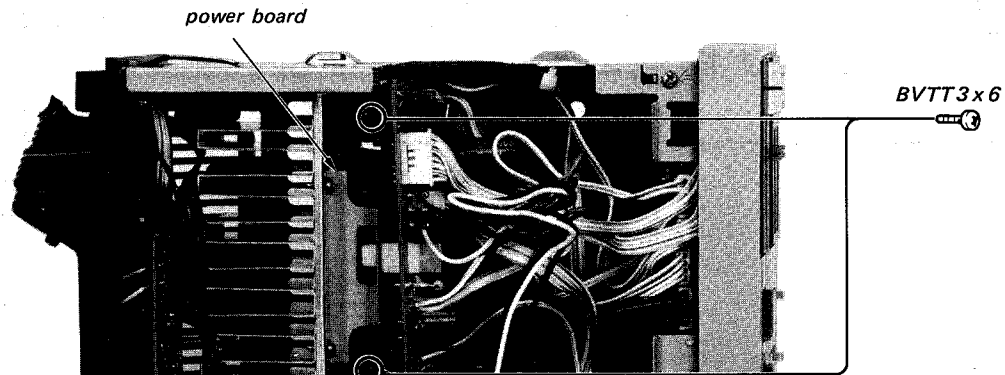
GRAPHIC EQUALIZER BOARD



PHONO BOARD



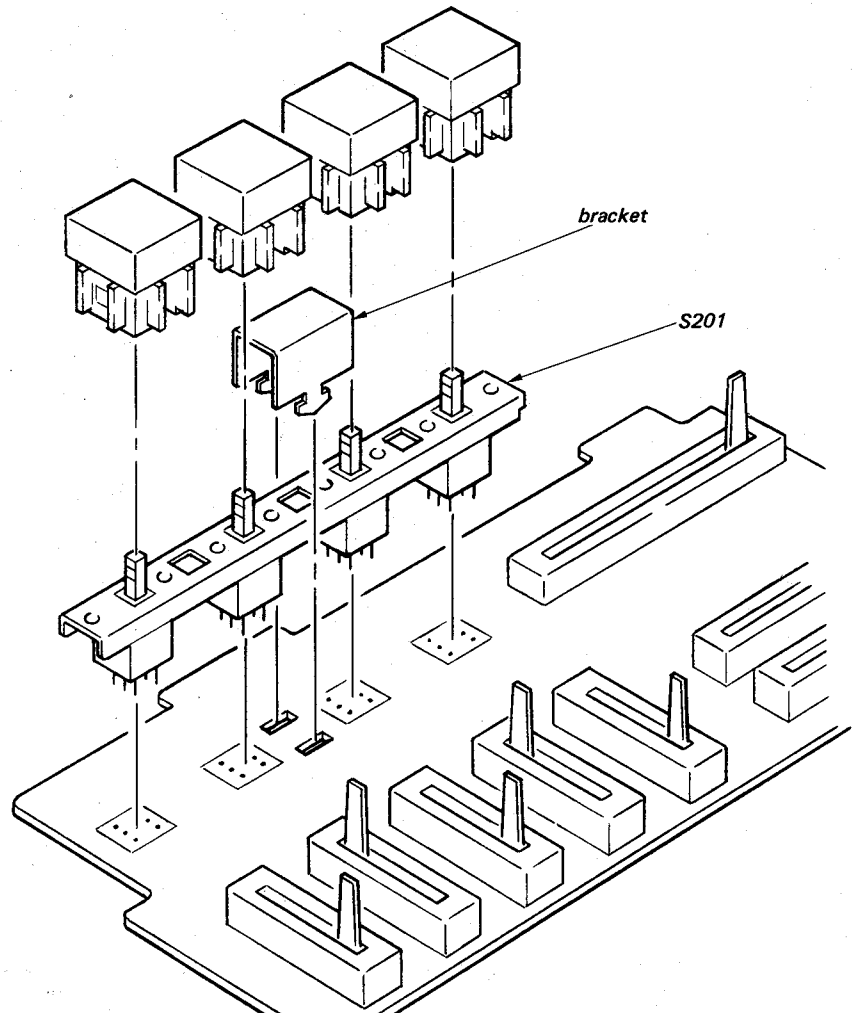
POWER BOARD



2-2. ASSEMBLY

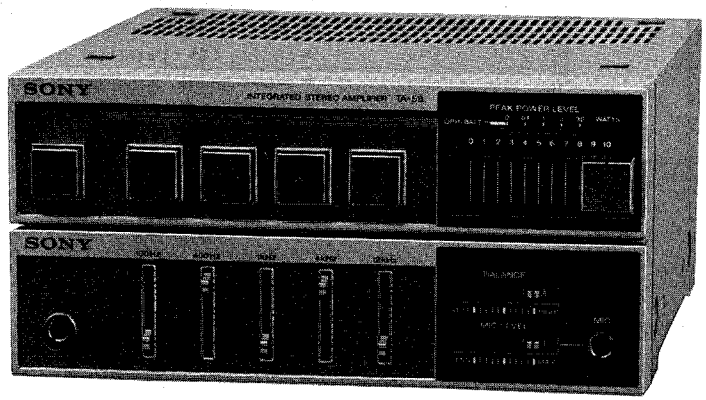
FUNCTION SWITCH

Be sure to install the bracket to prevent the function switch (S201) from breakdown caused by electrostatic discharge.

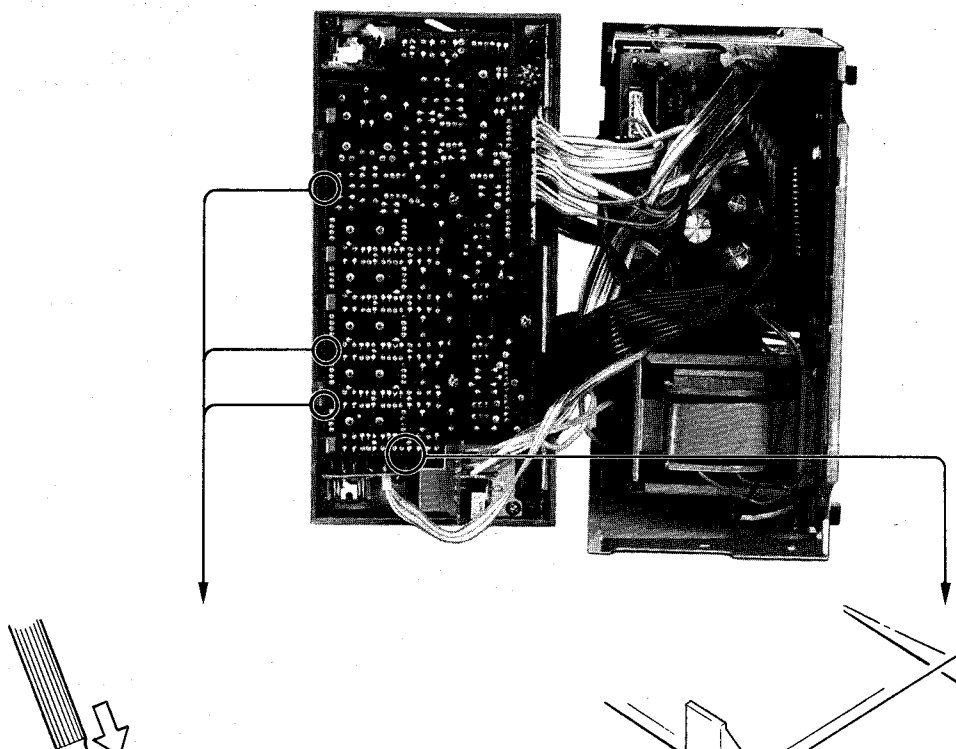


GRAPHIC EQUALIZER BOARD

① Set the each knob as shown below.



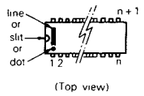
② Push the blind plate to set it under the claws with a screwdriver.



SECTION 3
DIAGRAMS

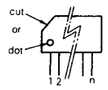
• Semiconductor Lead Layouts

μPC4558C

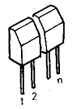


(Top view)

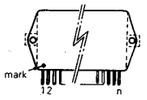
LB1413



M5218L

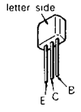


STK4311



(Marking side view)

2SA1175



2SC2458



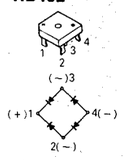
2SD1406



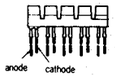
HZ3A1
HZ6A1L
1T-22
HZ11A1L



RB402



SLP252B-06



• Note on MOUNTING DIAGRAM

Note:

- ○— : parts extracted from the component side.
- ●— : parts extracted from the conductor side.
- ▒ : B + pattern
- ▬▬▶ : L-CH signal path
- ▬·▬▶ : R-CH signal path

• Note on SCHEMATIC DIAGRAM

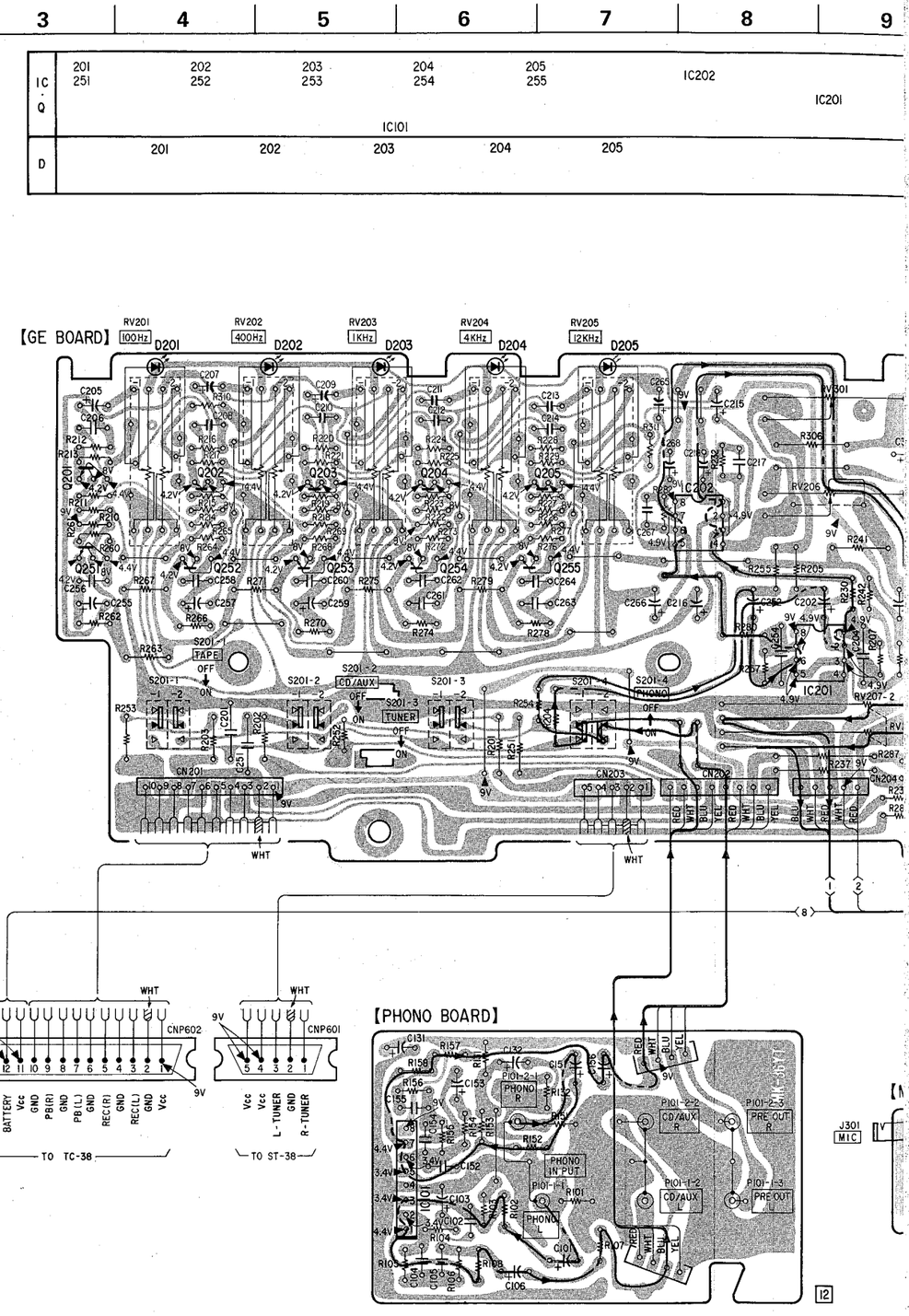
Note:

- Components for right channel have same values as for left channel. Reference numbers are coded from 150, 250, 450.
- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in ohms, 1/6 W unless otherwise noted. kΩ : 1000 Ω, MΩ : 1000 kΩ
- ▭ : nonflammable resistor.
- ⏦ : fusible resistor.
- ▭ : panel designation.
- ——— : B+ bus.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken under no-signal conditions with a VOM (50 kΩ/V).
- Voltage variations may be noted due to normal production tolerances.
- Switches

Ref. No.	Switch	Position
S201-1	TAPE	OFF
S201-2	CD/AUX	OFF
S201-3	TUNER	OFF
S201-4	PHONO	ON
S501	POWER	OFF
S601	VOLTAGE SELECTOR	110 – 120V

- ➡ : signal path

3-1. MOUNTING DIAGRAM



8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23

A B C D E F G H I J

IC202 IC201 301 IC401 402 452, 401, 451 IC402 IC Q
471 471 472 501 431 435 434 433 D

【POWER IC BOARD】

【POWER BOARD】

【MIC BOARD】

【LED METER BOARD】

【HEADPHONE BOARD】

【POWER SWITCH BOARD】

US,CND,E MODEL

【AC/DC BOARD】

US MODEL

T601 POWER TRANSFORMER

S601 VOLTAGE SELECTOR 110V/120V→220V/240V

AEP, UK MODEL

【AC/DC BOARD】

T601 POWER TRANSFORMER

RV301 MIC LEVEL
RV206 BALANCE
RV207 VOLUME
PEAK POWER LEVEL
SPEAKER IMPEADANCE 4-16Ω
(CHASSIS)

3-2. SCHEMATIC DIAGRAM ● Refer to page TA-7 for notes.

【PHONO BOARD】

IC101 M5218L EQ AMP

【GE BOARD】

IC201 μPC4558C GE AMP

Q201~205, 251~255 2SC2458 GE AMP

IC202 μPC4558C DRIVE AMP

Q401, 451 2SC2458
Q402, 452 2SA1175
MUTING

D431 HZ3A1

【POWER IC

【MIC BOARD】

Q301 2SC2458 MIC AMP

【LED METER BOARD】

IC402 LB1413 METER DRIVE

D433 HZ6A1L

D434, 435 1T22A

Q471 2SD1406 REGULATOR

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Note: Les composants identifiés par une trame et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Note: Voltages are measured with a VOM (50kΩ/V).

8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23

A B C D E F G H I J

Q201~205, 251~255 2SC2458
GE AMP

IC202 μPC4558C
DRIVE AMP

Q401, 451 2SC2458
Q402, 452 2SA1175
MUTING

D431 HZ3A1

【POWER BOARD】

【HEADPHONE BOARD】

J401 HEADPHONES

TM601 SPEAKER IMPEADANCE 4 — 16 Ω

【POWER IC BOARD】

IC401 STK431I
POWER AMP

【LED METER BOARD】

D501 SLP152B-50

D433 HZ6AIL

IC402 LB1413
METER DRIVE

D434, 435 IT22A

Q471 2SD1406
REGULATOR

D472 HZ11AIL

D471 RB402
RECT

US, CND, E MODEL
【AC/DC BOARD(1/2)】

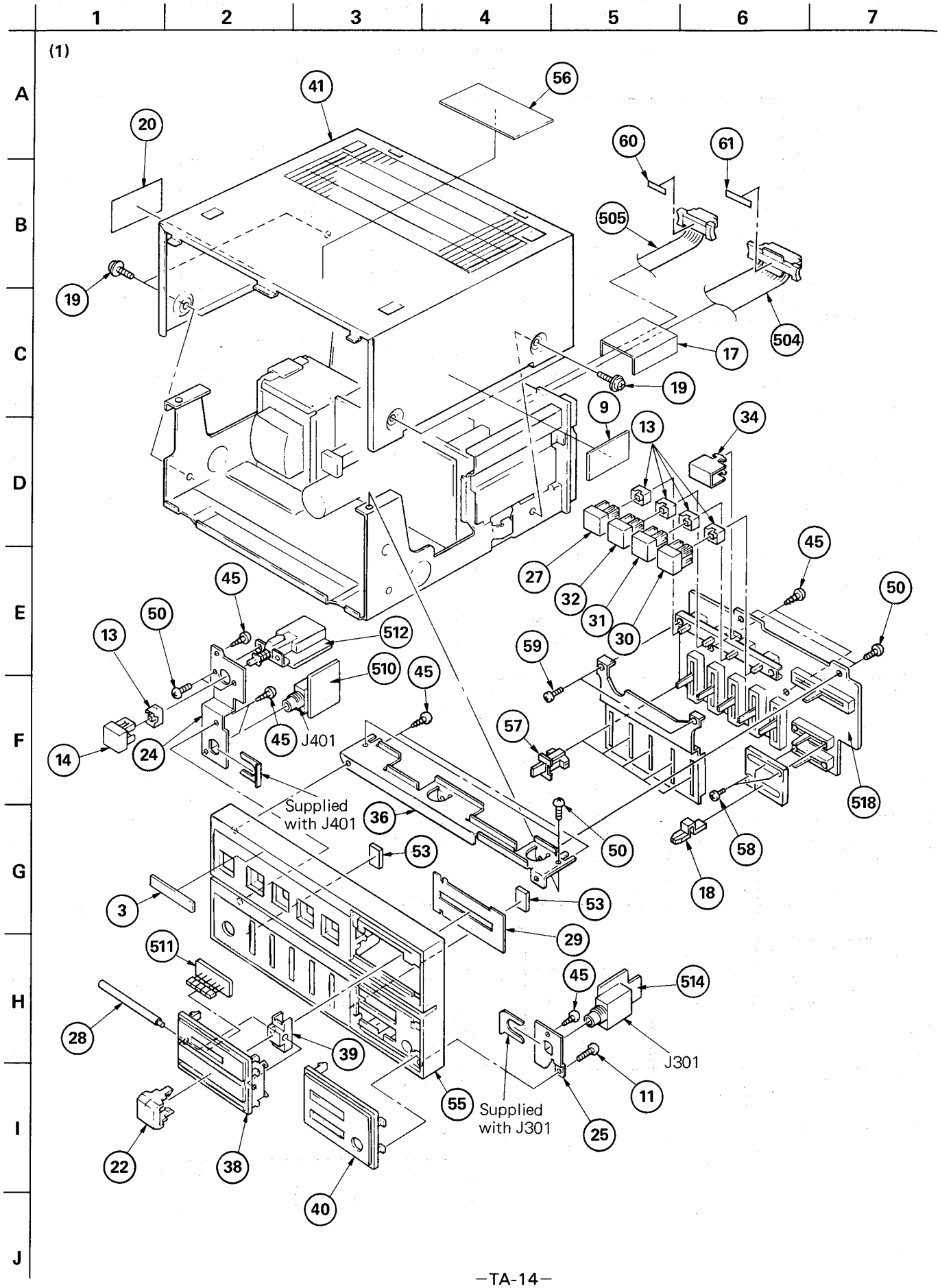
AEP, UK MODEL
【AC/DC BOARD(1/2)】

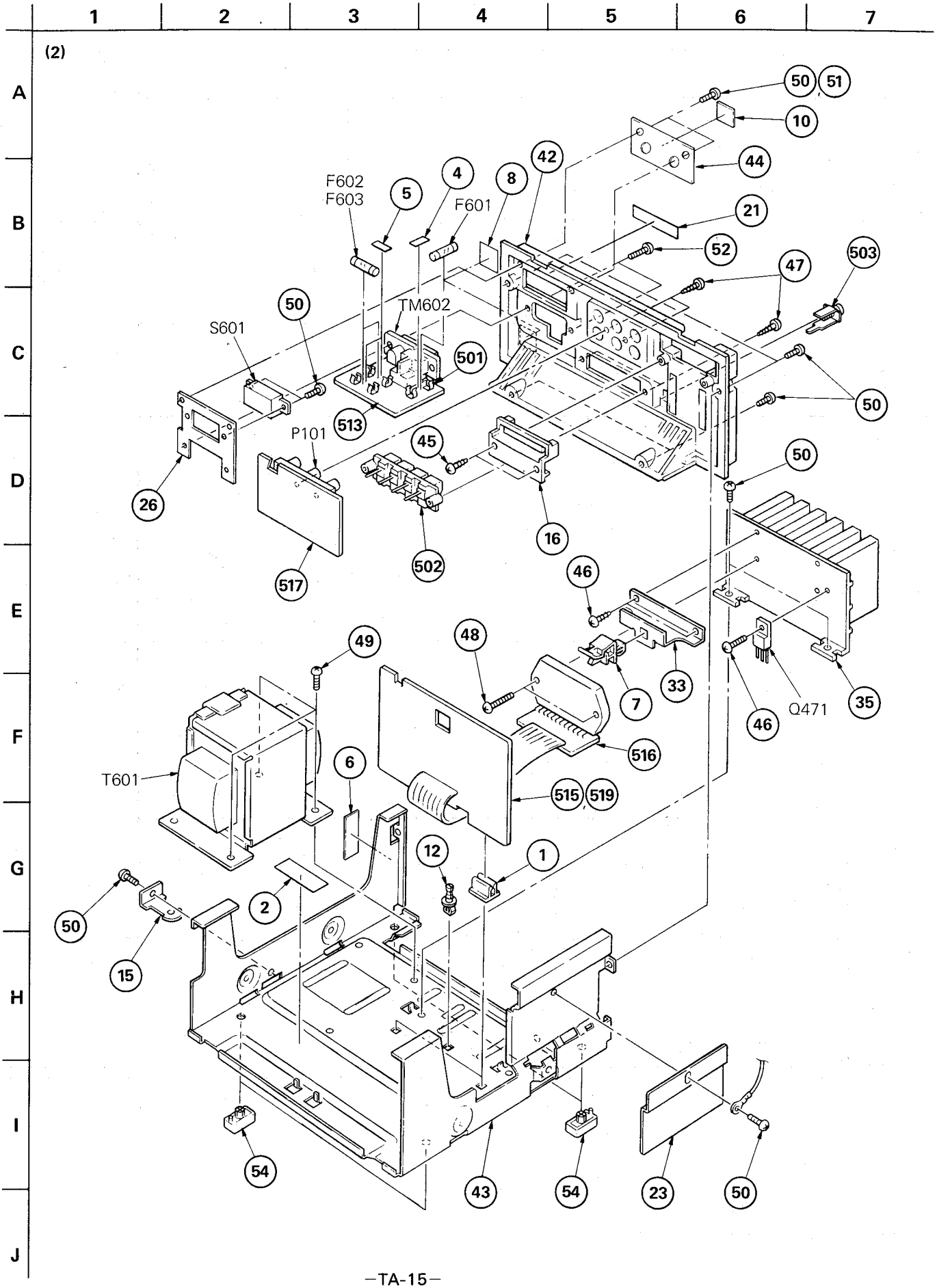
【POWER SWITCH BOARD】

【AC/DC BOARD(1/2)】

Note: Voltages are measured with a VOM (50kΩ/V).

SECTION 4
EXPLODED VIEWS AND PARTS LIST




1
2
3
4
5
6
7
A
B
C
D
E
F
G
H
I
J
(2)
50
51
10
44
42
4
8
F602
F603
5
F601
21
52
47
503
50
TM602
S601
501
513
50
P101
45
26
517
502
16
50
46
49
48
7
33
35
46
Q471
516
T601
6
515
519
12
1
2
50
15
54
43
54
23
50

GENERAL SECTION

No.	Part No.	Description
1 ♦	3-642-310-11	HOLDER, CIRCUIT BOARD
2	3-701-030-00	LABEL, SERIAL NUMBER
3	3-701-690-00	(UK)...LABEL (MADE IN JAPAN)
4 ♦	3-701-946-22	(US,Canadian)...LABEL, FUSE (1.6A)
5	3-701-946-10	(US).....LABEL, FUSE (1.0A)
5	3-701-946-30	(Canadian)...LABEL, FUSE (1.0A)
6	3-703-044-26	(US,Canadian)...LABEL, CAUTION
7 ♦	3-703-141-00	HOLDER, PCB
8	3-703-208-11	(US)....LABEL, IDENTIFICATION
9 ♦	3-703-678-00	(US,UK).....LABEL, CAUTION, NEW UL
9 ♦	3-703-845-01	(Canadian)...LABEL, CAUTION, NUW UL
10	3-703-680-00	(US)....LABEL, CAUTION, SUB, NEW UL
11	3-703-840-01	SCREW (2) (3.5X8), +P TAPPING
12 ♦	4-303-473-00	SUPPORT, PC
13	4-864-307-00	RING
14 ♦	4-884-810-01	(SILVER)...KNOB (POWER)(16X16), SQUARE
14 ♦	4-884-810-11	(BLACK)....KNOB (POWER)(16X16), SQUARE
15 ♦	4-884-820-00	BRACKET (B)
16 ♦	4-884-826-11	HOLDER (A), WIRE
17	4-884-875-00	LABEL (A) (CONNECTOR), CAUTION
18	4-886-818-51	(LIGHT SILVER,RED)...KNOB, CONTROL, SLIDE
18	4-886-818-61	(BLACK).....KNOB, CONTROL, SLIDE
19	4-886-821-01	(BLACK).....SCREW, M3 CASE
19	4-886-821-11	(LIGHT SILVER,RED)...SCREW, M3 CASE
20	4-905-316-01	(US).....LABLE, MODEL NUMBER
20	4-905-317-01	(Canadian)...LABLE, MODEL NUMBER
20	4-905-318-01	(AEP).....LABLE, MODEL NUMBER
20	4-905-319-01	(G-AEP).....LABLE, MODEL NUMBER
20	4-905-320-01	(UK).....LABLE, MODEL NUMBER
20	4-905-321-01	(E).....LABLE, MODEL NUMBER
21	4-902-947-11	(AEP,UK,G-AEP)...LABEL, AC OUTLET
22	4-902-952-01	(SILVER)...KNOB, CONTROL
22	4-902-952-11	(BLACK) ...KNOB, CONTROL
23 ♦	4-902-953-01	RETAINER, WIRE
24 ♦	4-902-954-01	BRACKET, POWER SWITCH
25 ♦	4-902-955-01	BRACKET, MICROPHONE
26 ♦	4-902-956-01	(US,Canadian,E)...BRACKET, INLET
26 ♦	4-902-956-21	(AEP,UK,G-AEP)....BRACKET, INLET
27	4-902-957-01	(SILVER)...KNOB (TAPE), FUNCTION
27	4-902-957-11	(BLACK) ...KNOB (TAPE), FUNCTION
28 ♦	4-902-958-01	SHAFT, SLIDE
29 ♦	4-902-959-01	PLATE (CONTROL), BLIND
30	4-902-960-01	(SILVER)...KNOB (PHONO), FUNCTION
30	4-902-960-11	(BLACK) ...KNOB (PHONO), FUNCTION

GENERAL SECTION

No.	Part No.	Description
31	4-902-961-01	(SLIVER)...KNOB (TUNER), FUNCTION
31	4-902-961-11	(BLACK)....KNOB (TUNER), FUNCTION
32	4-902-962-01	(SILVER)...KNOB (CD/AUX), FUNCTION
32	4-902-962-11	(BLACK)....KNOB (CD/AUX), FUNCTION
33 ♦	4-902-963-01	BRACKET, IC
34 ♦	4-902-964-01	BRACKET
35 ♦	4-902-965-01	HEAT SINK
36 ♦	4-902-966-01	REINFORCEMENT
37 ♦	X-4902-939-1	PLATE (A) ASSY, BLIND
38	4-902-968-21	(SILVER)...PANEL, (VOL) CONTROL
38	4-902-968-31	(BLACK)....PANEL, (VOL) CONTROL
39	4-902-969-01	JOINT, CONTROL KNOB
40	4-902-970-21	(SILVER)...PANEL (BAL), CONTROL
40	4-902-970-31	(BLACK)....PANEL (BAL), CONTROL
41	4-902-971-01	(SILVER)...CASE
41	4-902-971-11	(BLACK)....CASE
42	4-902-973-11	(US,Canadian).....PLATE (TA), JACK
42	4-902-973-01	(AEP,UK,E,G-AEP)...PLATE (TA), JACK
43 ♦	4-902-974-01	CHASSIS
44	4-902-997-01	(Canadian)...COVER, SELECTION
45	7-685-646-11	SCREW +BVTP 3X8 TYPE2 N-S
46	7-685-646-71	SCREW +BVTP 3X8 TYPE2 SLIT
47	7-685-647-14	SCREW +BVTP 3X10 TYPE2 N-S
48	7-685-650-21	SCREW +BVTP 3X16 TYPE2 SLIT
49	7-685-870-01	SCREW +BVTT 3X5 (S)
50	7-685-871-01	SCREW +BVTT 3X6 (S)
51	7-685-872-01	(US,Canadian)...SCREW +BVTT 3X8 (S)
52	7-685-873-01	SCREW +BVTT 3X10 (S)
53	9-911-815-01	CUSHION
54	X-4884-801-0	FOOT ASSY, RUBBER
55	X-4902-945-1	(SLIVER)...PANEL, ASSY
55	X-4902-945-2	(BLACK)....PANEL, ASSY
56 ♦	3-703-678-00	(UK)....LABEL, CAUTION, NEW UL
57	X-4884-850-1	(SLIVER)...KNOB ASSY, SV
57	X-4884-850-2	(BLACK)....KNOB ASSY, SV
58	7-621-772-10	SCREW +B 2X4
59	7-682-547-04	SCREW +P 3X6
60	4-910-066-31	(AEP,G-AEP)...LABEL (A), CONNECTOR (ST)
61	4-910-067-31	(AEP,G-AEP)...LABEL (B), CONNECTOR (TC)

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CAPACITORS:
MF:μF, PF:μμF.

RESISTORS
- All resistors are in ohms.
- F : nonflammable

COILS
- MMH : mH, UH : μH

SEMICONDUCTORS
In each case, U : μ, for example:
UA···: μA···, UPA···: μPA···, UPC···: μPC,
UPD···: μPD···

ELECTRICAL PARTS

Ref.No.	Part No.	Description
501	1-533-162-00	HOLDER, FUSE
502	1-536-705-21	TERMINAL BOARD (SP)
503	1-536-742-00	TERMINAL BOARD, ANTENNA
504	1-557-288-11	CORD (WITH CONNECTOR)
505	1-557-289-11	CORD (WITH CONNECTOR)
506	♦;1-562-249-00	SOCKET, CONNECTOR 4P
507	♦;1-562-250-00	SOCKET, CONNECTOR 5P
508	♦;1-562-327-00	SOCKET, CONNECTOR 3P
509	.....	
510	♦;1-615-377-11	PC BOARD, HEADPHONE
511	♦;1-615-378-11	PC BOARD, LED METER
512	♦;1-615-380-11	PC BOARD, POWER SWITCH
513	♦;1-615-375-11	PC BOARD, AC/DC
514	♦;1-615-376-11	PC BOARD, MICROPHONE
515	.....	
516	♦;1-615-374-11	PC BOARD, POWER IC
517	♦;1-615-379-11	PC BOARD, PHONO
518	♦;A-4375-216-A	MOUNTED PCB, GE CONTROL
519	♦;A-4388-452-A	(US,Canadian)...MOUNTED PCB, POWER
519	♦;A-4388-453-A	(E,AEP,G-AEP)...MOUNTED PCB, POWER
♦BP401	;1-508-830-12	H TYPE BASE POST
♦BP402	;1-508-830-12	H TYPE BASE POST
♦BP501	;1-535-139-00	BASE POST 22MM (10MM PITCH) 2P
♦BP601	;1-535-139-00	BASE POST 22MM (10MM PITCH) 2P
♦BP602	;1-535-139-00	BASE POST 22MM (10MM PITCH) 2P

C101	1-123-380-00	ELECT	1MF	20%	50V
C102	1-102-112-00	CERAMIC	330PF	10%	50V
C103	1-123-381-00	ELECT	2.2MF	20%	50V
C104	1-130-473-00	MYLAR	0.0015MF	5%	50V
C105	1-130-480-00	MYLAR	0.0056MF	5%	50V
C106	1-123-380-00	ELECT	1MF	20%	50V
C131	1-123-332-00	ELECT	47MF	20%	25V
C132	1-123-307-00	ELECT	100MF	20%	10V
C151	1-123-611-00	ELECT	1MF	20%	50V
C152	1-102-112-00	CERAMIC	330PF	10%	50V
C153	1-123-381-00	ELECT	2.2MF	20%	50V
C154	1-130-473-00	MYLAR	0.0015MF	5%	50V
C155	1-130-480-00	MYLAR	0.0056MF	5%	50V
C156	1-123-611-00	ELECT	1MF	20%	50V
C201	1-161-313-00	CERAMIC	150PF	10%	50V
C202	1-123-381-00	ELECT	2.2MF	20%	50V
C204	1-161-269-00	CERAMIC	68PF	5%	50V
C205	1-123-611-00	ELECT	1MF	20%	50V
C206	1-136-161-00	FILM	0.047MF	5%	50V
C207	1-123-608-00	ELECT	0.22MF	20%	50V
C208	1-161-052-00	CERAMIC	0.012MF	10%	25V

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
C209	1-123-607-00	ELECT	0.1MF	20%	50V
C210	1-102-125-00	CERAMIC	0.0047MF	10%	50V
C211	1-161-055-00	CERAMIC	0.022MF	10%	25V
C212	1-102-118-00	CERAMIC	0.0012MF	10%	50V
C213	1-161-013-00	CERAMIC	0.01MF	10%	25V
C214	1-102-112-00	CERAMIC	330PF	10%	50V
C215	1-123-612-00	ELECT	2.2MF	20%	50V
C216	1-123-381-00	ELECT	2.2MF	20%	50V
C217	1-102-106-00	CERAMIC	100PF	10%	50V
C218	1-123-616-00	ELECT	4.7MF	20%	25V
C241	1-123-310-00	ELECT	470MF	20%	10V
C251	1-161-313-00	CERAMIC	150PF	10%	50V
C252	1-123-381-00	ELECT	2.2MF	20%	50V
C254	1-161-269-00	CERAMIC	68PF	5%	50V
C255	1-123-611-00	ELECT	1MF	20%	50V
C256	1-136-161-00	FILM	0.047MF	5%	50V
C257	1-123-608-00	ELECT	0.22MF	20%	50V
C258	1-161-052-00	CERAMIC	0.012MF	10%	25V
C259	1-123-607-00	ELECT	0.1MF	20%	50V
C260	1-102-125-00	CERAMIC	0.0047MF	10%	50V
C261	1-161-055-00	CERAMIC	0.022MF	10%	25V
C262	1-102-118-00	CERAMIC	0.0012MF	10%	50V
C263	1-161-013-00	CERAMIC	0.01MF	10%	25V
C264	1-102-112-00	CERAMIC	330PF	10%	50V
C265	1-123-612-00	ELECT	2.2MF	20%	50V
C266	1-123-381-00	ELECT	2.2MF	20%	50V
C267	1-102-106-00	CERAMIC	100PF	10%	50V
C268	1-123-616-00	ELECT	4.7MF	20%	25V
C301	1-123-381-00	ELECT	2.2MF	20%	50V
C302	1-101-005-00	CERAMIC	0.022MF		50V
C303	1-123-612-00	ELECT	2.2MF	20%	50V
C304	1-123-332-00	ELECT	47MF	20%	25V
C401	1-123-380-00	ELECT	1MF	20%	50V
C402	1-102-114-00	CERAMIC	470PF	10%	50V
C403	1-123-345-00	ELECT	100MF	20%	25V
C404	⚠1-123-360-00	ELECT	100MF	20%	50V
C405	⚠1-123-350-00	ELECT	2200MF	20%	35V
C406	1-136-165-00	MYLAR	0.1MF	10%	50V
C408	1-136-165-00	MYLAR	0.1MF	10%	50V
C410	1-130-516-51	(US)...CAP, PE TEREPHTHALATE	0.01MF		50V
C431	1-123-345-00	ELECT	100MF	20%	25V
C432	1-123-360-00	ELECT	100MF	20%	50V
C433	1-123-345-00	ELECT	100MF	20%	25V
C434	1-123-359-00	ELECT	47MF	20%	50V
C435	1-123-610-00	ELECT	0.47MF	20%	50V
C436	1-123-356-00	ELECT	10MF	20%	50V

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UA···: μA···, UPA···: μPA···, UPC···: μPC, UPD···: μPD···

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ELECTRICAL PARTS

Ref.No.	Part No.	Description			
C437	1-123-356-00	ELECT	10MF	20%	50V
C451	1-123-380-00	ELECT	1MF	20%	50V
C452	1-102-114-00	CERAMIC	470PF	10%	50V
C453	1-123-345-00	ELECT	100MF	20%	25V
C454 ⚠	1-123-360-00	ELECT	100MF	20%	50V
C455 ⚠	1-123-350-00	ELECT	2200MF	20%	35V
C456	1-136-165-00	MYLAR	0.1MF	10%	50V
C458	1-136-165-00	MYLAR	0.1MF	10%	50V
C471 ⚠	1-125-364-11	ELECT(BLOCK)	4700MF	20%	50V
C472 ⚠	1-102-394-00	CERAMIC	0.01MF		250V
C473 ⚠	1-102-394-00	CERAMIC	0.01MF		250V
C474 ⚠	1-123-338-00	ELECT	2200MF	20%	25V
C475 ⚠	1-123-334-00	ELECT	220MF	20%	25V
C490	1-136-153-00	(US,Canadian)... CAP, PE TEREPHTHALATE 0.01MF 50V			
C501 ⚠	1-161-744-00	CAP, CERAMIC 10000PF FZ			
C502	1-101-006-00	CERAMIC	0.047MF		50V
♦CNJ201	1-564-119-11	PIN, CONNECTOR 10P			
♦CNJ202	1-564-117-11	PIN, CONNECTOR 8P			
♦CNJ203	1-564-114-11	PIN, CONNECTOR 5P			
♦CNJ204	1-564-114-11	PIN, CONNECTOR 5P			
♦CNJ301	1-564-111-00	PIN, CONNECTOR 2P			
♦CNJ401	1-564-111-00	PIN, CONNECTOR 2P			
♦CNJ402	1-560-604-00	PIN, CONNECTOR 5P			
♦CNJ403	1-560-605-00	PIN, CONNECTOR 6P			
♦CNJ501	1-560-602-00	PIN, CONNECTOR 3P			
♦CNJ601	1-560-602-00	PIN, CONNECTOR 3P			
D431	8-719-990-31	DIODE HZ3A1			
D433	8-719-910-61	DIODE HZ6A1L			
D434	8-719-022-21	DIODE 1T22A			
D435	8-719-022-21	DIODE 1T22A			
D471 ⚠	8-719-300-57	DIODE RB402			
D472 ⚠	8-719-910-11	DIODE HZ11A1L			
D501	8-719-902-06	DIODE SLP152B-50 (PEAK POWER LEVEL)			
F601 ⚠	1-532-259-00	(AEP,UK,E,G-AEP)...FUSE, TIME-LAG			
F601 ⚠	1-532-555-00	(US,Canadian)....FUSE, GLASS TUBE(1.6A)			
F602 ⚠	1-532-807-00	(AEP,UK,E,G-AEP)...FUSE, TIME-LAG			
F602 ⚠	1-532-536-00	(Canadian).....FUSE, GLASS TUBE(1A)			
F602 ⚠	1-532-807-11	(US).....FUSE, GLASS TUBE(1A)			
F603 ⚠	1-532-807-00	(E)....FUSE, TIME-LAG (1.0A)			
F603 ⚠	1-532-536-00	(Canadian).....FUSE, GLASS TUBE(1A)			
F603 ⚠	1-532-807-11	(US).....FUSE, GLASS TUBE(1A)			
IC101	8-759-600-02	IC M5218L			
IC201	8-759-145-58	IC UPC4558C			
IC202	8-759-145-58	IC UPC4558C			
⚠IC401	8-749-943-11	IC STK4311			
IC402	8-759-800-28	IC LB1413			

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
J301	1-507-857-00	JACK, LARGE TYPE (MIC)			
J401	1-507-849-00	JACK, LARGE TYPE (HEADPHONES)			
P101	1-507-914-21	JACK, PIN 6P (PHONO/CD,AUX/ PHONO INPUT/PRE OUT)			
Q201	8-729-245-83	TRANSISTOR 2SC2458			
Q202	8-729-245-83	TRANSISTOR 2SC2458			
Q203	8-729-245-83	TRANSISTOR 2SC2458			
Q204	8-729-245-83	TRANSISTOR 2SC2458			
Q205	8-729-245-83	TRANSISTOR 2SC2458			
Q251	8-729-245-83	TRANSISTOR 2SC2458			
Q252	8-729-245-83	TRANSISTOR 2SC2458			
Q253	8-729-245-83	TRANSISTOR 2SC2458			
Q254	8-729-245-83	TRANSISTOR 2SC2458			
Q255	8-729-245-83	TRANSISTOR 2SC2458			
Q301	8-729-245-83	TRANSISTOR 2SC2458			
Q401	8-729-245-83	TRANSISTOR 2SC2458			
Q402	8-729-117-54	TRANSISTOR 2SA1175			
Q451	8-729-245-83	TRANSISTOR 2SC2458			
Q452	8-729-117-54	TRANSISTOR 2SA1175			
Q471	8-729-201-78	TRANSISTOR 2SD1406			
R101	1-247-875-00	CARBON	68K	5%	1/6W
R102	1-247-831-00	CARBON	1K	5%	1/6W
R103	1-247-885-00	CARBON	180K	5%	1/6W
R104	1-247-831-00	CARBON	1K	5%	1/6W
R105	1-247-871-00	CARBON	47K	5%	1/6W
R106	1-247-901-00	CARBON	820K	5%	1/6W
R107	1-247-839-00	CARBON	2.2K	5%	1/6W
R108	1-247-841-00	CARBON	2.7K	5%	1/6W
R131	1-247-871-00	CARBON	47K	5%	1/6W
R132	1-247-872-00	CARBON	51K	5%	1/6W
R151	1-247-875-00	CARBON	68K	5%	1/6W
R152	1-247-831-00	CARBON	1K	5%	1/6W
R153	1-247-885-00	CARBON	180K	5%	1/6W
R154	1-247-831-00	CARBON	1K	5%	1/6W
R155	1-247-871-00	CARBON	47K	5%	1/6W
R156	1-247-901-00	CARBON	820K	5%	1/6W
R157	1-247-839-00	CARBON	2.2K	5%	1/6W
R158	1-247-841-00	CARBON	2.7K	5%	1/6W
R201	1-247-839-00	CARBON	2.2K	5%	1/6W
R202	1-247-866-00	CARBON	30K	5%	1/6W
R203	1-247-839-00	CARBON	2.2K	5%	1/6W
R204	1-247-867-00	CARBON	33K	5%	1/6W
R205	1-247-855-00	CARBON	10K	5%	1/6W
R206	1-247-839-00	CARBON	2.2K	5%	1/6W
R207	1-247-874-00	CARBON	62K	5%	1/6W
R210	1-247-871-00	CARBON	47K	5%	1/6W
R211	1-247-831-00	CARBON	1K	5%	1/6W

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ELECTRICAL PARTS

Ref.No.	Part No.	Description			
R212	1-247-833-00	CARBON	1.2K	5%	1/6W
R213	1-247-847-00	CARBON	4.7K	5%	1/6W
R214	1-247-871-00	CARBON	47K	5%	1/6W
R215	1-247-831-00	CARBON	1K	5%	1/6W
R216	1-247-833-00	CARBON	1.2K	5%	1/6W
R217	1-247-847-00	CARBON	4.7K	5%	1/6W
R218	1-247-871-00	CARBON	47K	5%	1/6W
R219	1-247-831-00	CARBON	1K	5%	1/6W
R220	1-247-833-00	CARBON	1.2K	5%	1/6W
R221	1-247-847-00	CARBON	4.7K	5%	1/6W
R222	1-247-871-00	CARBON	47K	5%	1/6W
R223	1-247-831-00	CARBON	1K	5%	1/6W
R224	1-247-833-00	CARBON	1.2K	5%	1/6W
R225	1-247-847-00	CARBON	4.7K	5%	1/6W
R226	1-247-871-00	CARBON	47K	5%	1/6W
R227	1-247-831-00	CARBON	1K	5%	1/6W
R228	1-247-833-00	CARBON	1.2K	5%	1/6W
R229	1-247-847-00	CARBON	4.7K	5%	1/6W
R230	1-247-845-00	CARBON	3.9K	5%	1/6W
R232	1-247-845-00	CARBON	3.9K	5%	1/6W
R235	1-247-833-00	CARBON	1.2K	5%	1/6W
R236	1-247-847-00	CARBON	4.7K	5%	1/6W
R237	1-247-847-00	CARBON	4.7K	5%	1/6W
R241	1-247-843-00	CARBON	3.3K	5%	1/6W
R242	1-247-841-00	CARBON	2.7K	5%	1/6W
R251	1-247-839-00	CARBON	2.2K	5%	1/6W
R252	1-247-866-00	CARBON	30K	5%	1/6W
R253	1-247-839-00	CARBON	2.2K	5%	1/6W
R254	1-247-867-00	CARBON	33K	5%	1/6W
R255	1-247-855-00	CARBON	10K	5%	1/6W
R257	1-247-874-00	CARBON	62K	5%	1/6W
R260	1-247-871-00	CARBON	47K	5%	1/6W
R261	1-247-831-00	CARBON	1K	5%	1/6W
R262	1-247-833-00	CARBON	1.2K	5%	1/6W
R263	1-247-847-00	CARBON	4.7K	5%	1/6W
R264	1-247-871-00	CARBON	47K	5%	1/6W
R265	1-247-831-00	CARBON	1K	5%	1/6W
R266	1-247-833-00	CARBON	1.2K	5%	1/6W
R267	1-247-847-00	CARBON	4.7K	5%	1/6W
R268	1-247-871-00	CARBON	47K	5%	1/6W
R269	1-247-831-00	CARBON	1K	5%	1/6W
R270	1-247-833-00	CARBON	1.2K	5%	1/6W
R271	1-247-847-00	CARBON	4.7K	5%	1/6W
R272	1-247-871-00	CARBON	47K	5%	1/6W
R273	1-247-831-00	CARBON	1K	5%	1/6W

ELECTRICAL PARTS

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R274	1-247-833-00	CARBON	1.2K	5%	1/6W
R275	1-247-847-00	CARBON	4.7K	5%	1/6W
R276	1-247-871-00	CARBON	47K	5%	1/6W
R277	1-247-831-00	CARBON	1K	5%	1/6W
R278	1-247-833-00	CARBON	1.2K	5%	1/6W
R279	1-247-847-00	CARBON	4.7K	5%	1/6W
R280	1-247-845-00	CARBON	3.9K	5%	1/6W
R282	1-247-845-00	CARBON	3.9K	5%	1/6W
R285	1-247-833-00	CARBON	1.2K	5%	1/6W
R286	1-247-847-00	CARBON	4.7K	5%	1/6W
R287	1-247-847-00	CARBON	4.7K	5%	1/6W
R301	1-247-855-00	CARBON	10K	5%	1/6W
R302	1-247-855-00	CARBON	10K	5%	1/6W
R303	1-247-871-00	CARBON	47K	5%	1/6W
R304	1-247-841-00	CARBON	2.7K	5%	1/6W
R305	1-247-823-00	CARBON	470	5%	1/6W
R306	1-247-855-00	CARBON	10K	5%	1/6W
R310	1-247-813-00	(SILVER)...CARBON	180	5%	1/6W
R310	1-247-820-00	(BLACK)....CARBON	360	5%	1/6W
R311	1-247-817-00	(SILVER)...CARBON	270	5%	1/6W
R311	1-247-825-00	(BLACK)....CARBON	560	5%	1/6W
R401	1-247-855-00	CARBON	10K	5%	1/6W
R402	1-247-847-00	CARBON	4.7K	5%	1/6W
R403	1-247-847-00	CARBON	4.7K	5%	1/6W
R404	1-247-801-00	CARBON	56	5%	1/6W
R405	1-247-843-00	CARBON	3.3K	5%	1/6W
R406 ⚠	1-206-640-00	METAL OXIDE	100	5%	2W F
R409 ⚠	1-247-192-00	CARBON	10	5%	1/2W F
R410 ⚠	1-212-368-00	METAL OXIDE	4.7	5%	1W F
R411	1-247-863-00	CARBON	22K	5%	1/6W
R412	1-247-839-00	CARBON	2.2K	5%	1/6W
R431	1-247-848-00	CARBON	5.1K	5%	1/6W
R432	1-247-855-00	CARBON	10K	5%	1/6W
R433	1-247-839-00	CARBON	2.2K	5%	1/6W
R435	1-247-831-00	CARBON	1K	5%	1/6W
R436	1-247-867-00	CARBON	33K	5%	1/6W
R437	1-247-863-00	CARBON	22K	5%	1/6W
R438	1-247-855-00	CARBON	10K	5%	1/6W
R439	1-247-811-00	CARBON	150	5%	1/6W
R451	1-247-855-00	CARBON	10K	5%	1/6W
R452	1-247-847-00	CARBON	4.7K	5%	1/6W
R453	1-247-847-00	CARBON	4.7K	5%	1/6W
R454	1-247-801-00	CARBON	56	5%	1/6W
R455	1-247-843-00	CARBON	3.3K	5%	1/6W
R456 ⚠	1-206-640-00	METAL OXIDE	100	5%	2W F

NOTE:
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- Items marked " ♦ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part numbers (Δ-ΔΔΔ-ΔΔΔ-XX or Δ-ΔΔΔΔ-ΔΔΔ-X) may be different from those used in the set.

CAPACITORS:
MF:μF, PF:μμF.

RESISTORS
- All resistors are in ohms.
- F : nonflammable

COILS
- MMH : mH, UH : μH

SEMICONDUCTORS
In each case, U : μ, for example:
UA···: μA···, UPA···: μPA···, UPC···: μPC, UPD···: μPD···

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Les composants identifiés par une trame et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
R212	1-247-833-00	CARBON	1.2K	5%	1/6W
R213	1-247-847-00	CARBON	4.7K	5%	1/6W
R214	1-247-871-00	CARBON	47K	5%	1/6W
R215	1-247-831-00	CARBON	1K	5%	1/6W
R216	1-247-833-00	CARBON	1.2K	5%	1/6W
R217	1-247-847-00	CARBON	4.7K	5%	1/6W
R218	1-247-871-00	CARBON	47K	5%	1/6W
R219	1-247-831-00	CARBON	1K	5%	1/6W
R220	1-247-833-00	CARBON	1.2K	5%	1/6W
R221	1-247-847-00	CARBON	4.7K	5%	1/6W
R222	1-247-871-00	CARBON	47K	5%	1/6W
R223	1-247-831-00	CARBON	1K	5%	1/6W
R224	1-247-833-00	CARBON	1.2K	5%	1/6W
R225	1-247-847-00	CARBON	4.7K	5%	1/6W
R226	1-247-871-00	CARBON	47K	5%	1/6W
R227	1-247-831-00	CARBON	1K	5%	1/6W
R228	1-247-833-00	CARBON	1.2K	5%	1/6W
R229	1-247-847-00	CARBON	4.7K	5%	1/6W
R230	1-247-845-00	CARBON	3.9K	5%	1/6W
R232	1-247-845-00	CARBON	3.9K	5%	1/6W
R235	1-247-833-00	CARBON	1.2K	5%	1/6W
R236	1-247-847-00	CARBON	4.7K	5%	1/6W
R237	1-247-847-00	CARBON	4.7K	5%	1/6W
R241	1-247-843-00	CARBON	3.3K	5%	1/6W
R242	1-247-841-00	CARBON	2.7K	5%	1/6W
R251	1-247-839-00	CARBON	2.2K	5%	1/6W
R252	1-247-866-00	CARBON	30K	5%	1/6W
R253	1-247-839-00	CARBON	2.2K	5%	1/6W
R254	1-247-867-00	CARBON	33K	5%	1/6W
R255	1-247-855-00	CARBON	10K	5%	1/6W
R257	1-247-874-00	CARBON	62K	5%	1/6W
R260	1-247-871-00	CARBON	47K	5%	1/6W
R261	1-247-831-00	CARBON	1K	5%	1/6W
R262	1-247-833-00	CARBON	1.2K	5%	1/6W
R263	1-247-847-00	CARBON	4.7K	5%	1/6W
R264	1-247-871-00	CARBON	47K	5%	1/6W
R265	1-247-831-00	CARBON	1K	5%	1/6W
R266	1-247-833-00	CARBON	1.2K	5%	1/6W
R267	1-247-847-00	CARBON	4.7K	5%	1/6W
R268	1-247-871-00	CARBON	47K	5%	1/6W
R269	1-247-831-00	CARBON	1K	5%	1/6W
R270	1-247-833-00	CARBON	1.2K	5%	1/6W
R271	1-247-847-00	CARBON	4.7K	5%	1/6W
R272	1-247-871-00	CARBON	47K	5%	1/6W
R273	1-247-831-00	CARBON	1K	5%	1/6W

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
R274	1-247-833-00	CARBON	1.2K	5%	1/6W
R275	1-247-847-00	CARBON	4.7K	5%	1/6W
R276	1-247-871-00	CARBON	47K	5%	1/6W
R277	1-247-831-00	CARBON	1K	5%	1/6W
R278	1-247-833-00	CARBON	1.2K	5%	1/6W
R279	1-247-847-00	CARBON	4.7K	5%	1/6W
R280	1-247-845-00	CARBON	3.9K	5%	1/6W
R282	1-247-845-00	CARBON	3.9K	5%	1/6W
R285	1-247-833-00	CARBON	1.2K	5%	1/6W
R286	1-247-847-00	CARBON	4.7K	5%	1/6W
R287	1-247-847-00	CARBON	4.7K	5%	1/6W
R301	1-247-855-00	CARBON	10K	5%	1/6W
R302	1-247-855-00	CARBON	10K	5%	1/6W
R303	1-247-871-00	CARBON	47K	5%	1/6W
R304	1-247-841-00	CARBON	2.7K	5%	1/6W
R305	1-247-823-00	CARBON	470	5%	1/6W
R306	1-247-855-00	CARBON	10K	5%	1/6W
R310	1-247-813-00	(SILVER)...CARBON	180	5%	1/6W
R310	1-247-820-00	(BLACK)....CARBON	360	5%	1/6W
R311	1-247-817-00	(SILVER)...CARBON	270	5%	1/6W
R311	1-247-825-00	(BLACK)....CARBON	560	5%	1/6W
R401	1-247-855-00	CARBON	10K	5%	1/6W
R402	1-247-847-00	CARBON	4.7K	5%	1/6W
R403	1-247-847-00	CARBON	4.7K	5%	1/6W
R404	1-247-801-00	CARBON	56	5%	1/6W
R405	1-247-843-00	CARBON	3.3K	5%	1/6W
R406 ⚠	1-206-640-00	METAL OXIDE	100	5%	2W F
R409 ⚠	1-247-192-00	CARBON	10	5%	1/2W F
R410 ⚠	1-212-368-00	METAL OXIDE	4.7	5%	1W F
R411	1-247-863-00	CARBON	22K	5%	1/6W
R412	1-247-839-00	CARBON	2.2K	5%	1/6W
R431	1-247-848-00	CARBON	5.1K	5%	1/6W
R432	1-247-855-00	CARBON	10K	5%	1/6W
R433	1-247-839-00	CARBON	2.2K	5%	1/6W
R435	1-247-831-00	CARBON	1K	5%	1/6W
R436	1-247-867-00	CARBON	33K	5%	1/6W
R437	1-247-863-00	CARBON	22K	5%	1/6W
R438	1-247-855-00	CARBON	10K	5%	1/6W
R439	1-247-811-00	CARBON	150	5%	1/6W
R451	1-247-855-00	CARBON	10K	5%	1/6W
R452	1-247-847-00	CARBON	4.7K	5%	1/6W
R453	1-247-847-00	CARBON	4.7K	5%	1/6W
R454	1-247-801-00	CARBON	56	5%	1/6W
R455	1-247-843-00	CARBON	3.3K	5%	1/6W
R456 ⚠	1-206-640-00	METAL OXIDE	100	5%	2W F

NOTE:
- Items with no part number and no description are not stocked because they are seldom required for routine service.
- Items marked " ♦ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part numbers (Δ-ΔΔΔ-ΔΔΔ-XX or Δ-ΔΔΔΔ-ΔΔΔ-X) may be different from those used in the set.

CAPACITORS:
MF:μF, PF:μμF.

RESISTORS
- All resistors are in ohms.
- F : nonflammable

COILS
- MMH : mH, UH : μH

SEMICONDUCTORS
In each case, U : μ, for example:
UA···: μA···, UPA···: μPA···, UPC···: μPC, UPD···: μPD···

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Les composants identifiés par une trame et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

ELECTRICAL PARTS

Ref.No.	Part No.	Description				
R459	⚠1-247-192-00	CARBON	10	5%	1/2W	F
R460	⚠1-212-368-00	METAL OXIDE	4.7	5%	1W	F
R461	1-247-863-00	CARBON	22K	5%	1/6W	
R462	1-247-839-00	CARBON	2.2K	5%	1/6W	
R471	⚠1-247-232-00	CARBON	470	5%	1/2W	F
R472	1-247-823-00	CARBON	470	5%	1/6W	
R501	1-247-119-00	CARBON	330	5%	1/4W	
R551	1-247-119-00	CARBON	330	5%	1/4W	
R601	⚠1-202-723-00	(US,Canadian)...SOLID	2.2M		1/2W	
R602	⚠1-217-422-00	FUSIBLE	1	5%	1/2W	F
RV201	1-230-813-11	RES, VAR, SLIDE 250K/250K (100Hz) (INCLUED D201)				
RV202	1-230-813-11	RES, VAR, SLIDE 250K/250K (400Hz) (INCLUED D202)				
RV203	1-230-813-11	RES, VAR, SLIDE 250K/250K (1kHz) (INCLUED D203)				
RV204	1-230-813-11	RES, VAR, SLIDE 250K/250K (4kHz) (INCLUED D204)				
RV205	1-230-813-11	RES, VAR, SLIDE 250K/250K (12kHz) (INCLUED D205)				
RV206	1-230-360-11	RES, VAR, SLIDE 100K (BALANCE)				
RV207	1-230-359-11	RES, VAR, SLIDE 100K/100K (VOLUME)				
RV301	1-230-361-11	RES, VAR, SLIDE 50K (MIC LEVEL)				

ELECTRICAL PARTS

Ref.No.	Part No.	Description
S201	1-554-755-11	SWITCH, PUSH (4 KEY) (TAPE/CD,AUX/PHONO/TUNER)
S501	⚠1-554-753-11	(US,Canadian)...SWITCH, PUSE (AC POWER) (POWER)
S501	⚠1-554-754-11	(AEP,UK,E,G-AEP)...SWITCH, PUSH (AC POWER)(1 KEY)(POWER)
S601	⚠1-554-752-11	(US,Canadian,E)..SWITCH, VOLTAGE CHANGE (VOLTAGE SELECTOR)
T601	⚠1-447-771-11	(US,Canadian).....TRANSFORMER, POWER
T601	⚠1-447-772-11	(E).....TRANSFORMER, POWER
T601	⚠1-447-773-11	(ASEP,UK,G-AEP)...TRANSFORMER, POWER
⚠TM602	.1-561-926-00	(US,Canadian).....INLET, AC DC
⚠TM602	.1-562-447-11	(E,AEP,UK,G-AEP)...INLET, AC DC

NOTE:
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- Due to standardization, parts with part numbers (Δ-ΔΔΔ-ΔΔΔ-XX or Δ-ΔΔΔΔ-ΔΔΔ-X) may be different from those used in the set.

CAPACITORS:
MF:μF, PF:μμF.

RESISTORS
- All resistors are in ohms.
- F : nonflammable

COILS
- MMH : mH, UH : μH

SEMICONDUCTORS
In each case, U : μ, for example:
UA···: μA···, UPA···: μPA···, UPC···: μPC, UPD···: μPD···

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

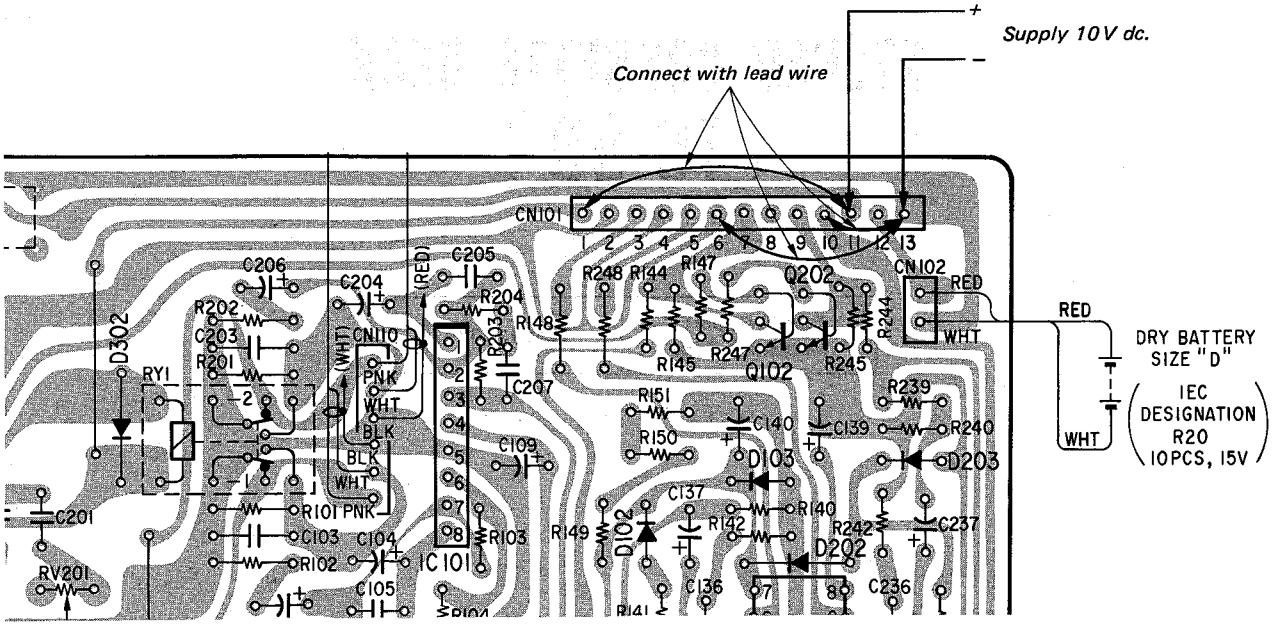
Les composants identifiés par une trame et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

STEREO COSSETTE DECK
〔TC-58〕

Tape Transport Mechanism Type	TCM-130R10

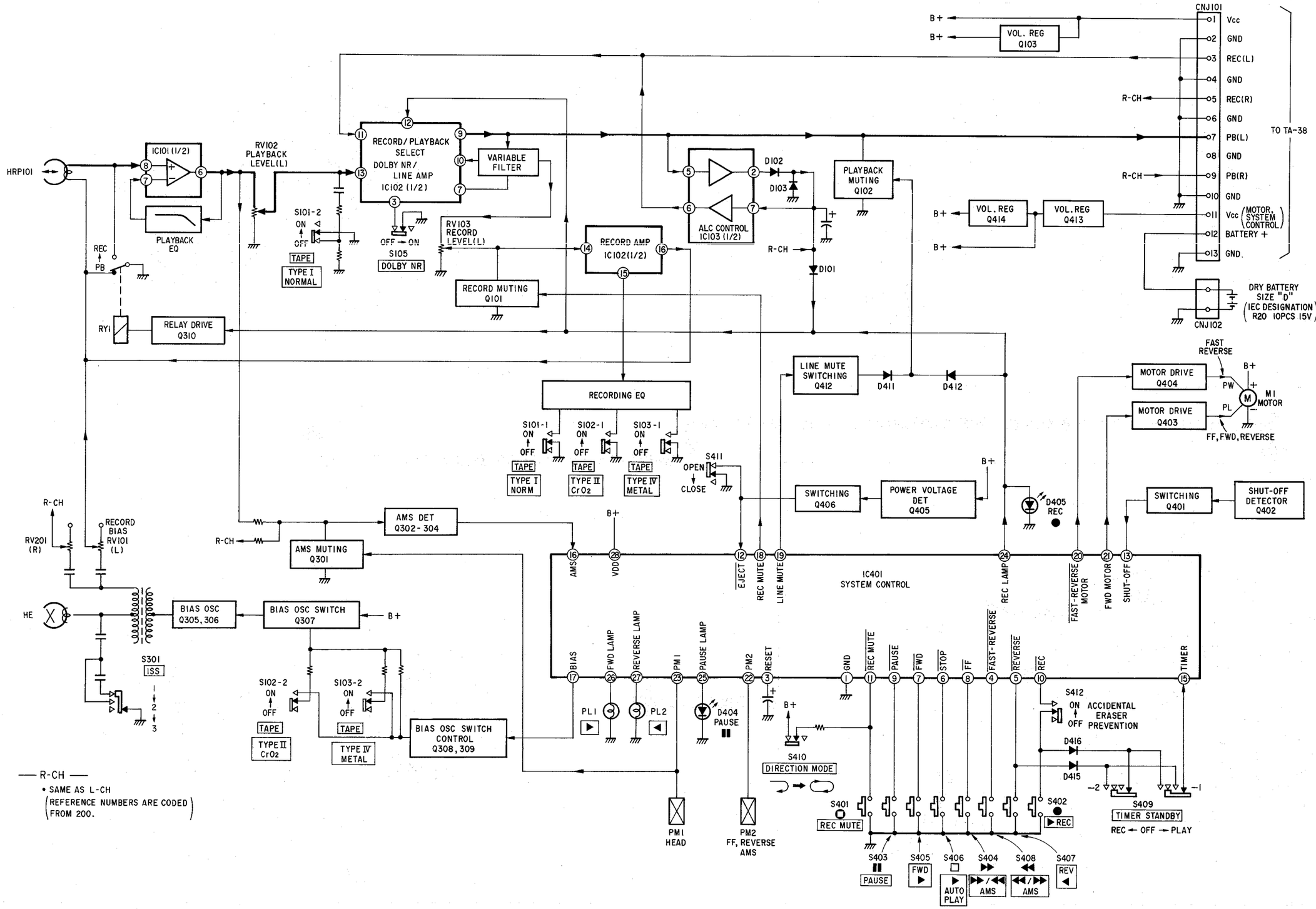
SERVICING NOTE

1. Voltage measurement should be made under the following condition.



2. When operating by batteries, this set will be shut off if the power voltage drops to about 8 – 9 V (Q405, 406). Be careful of the power voltage when repairing.

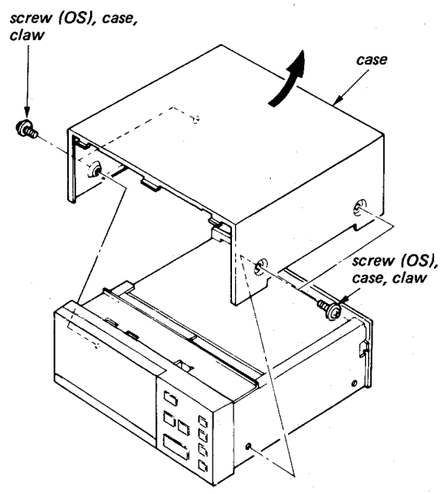
SECTION 1
BLOCK DIAGRAM



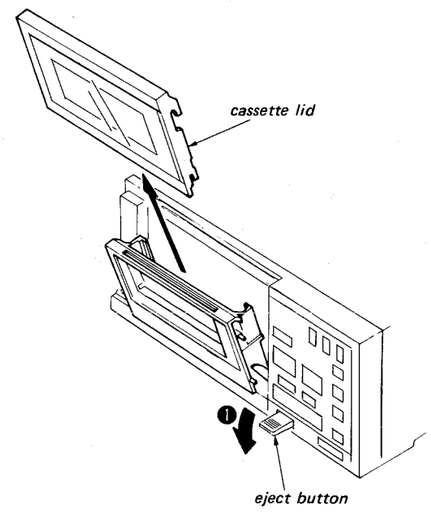
SECTION 2
DISASSEMBLY

Note: Follow the disassembly procedure in the numerical order given.

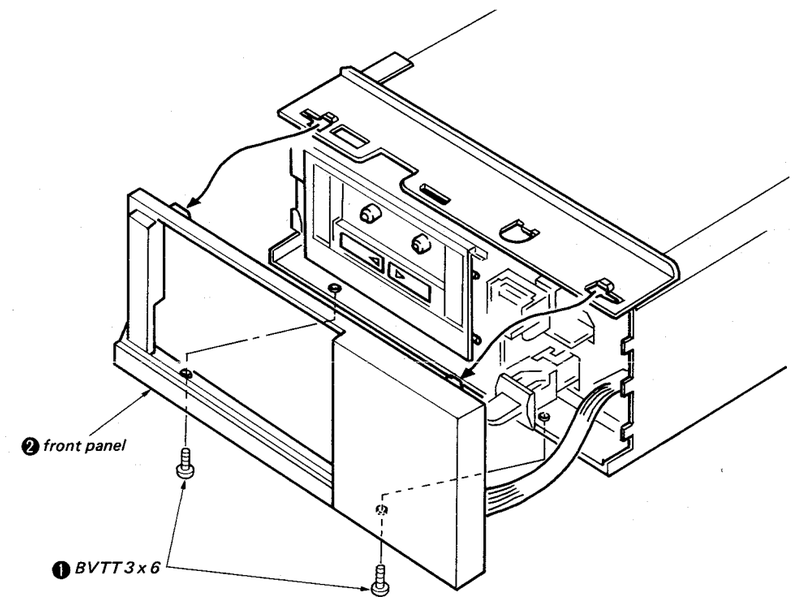
CASE



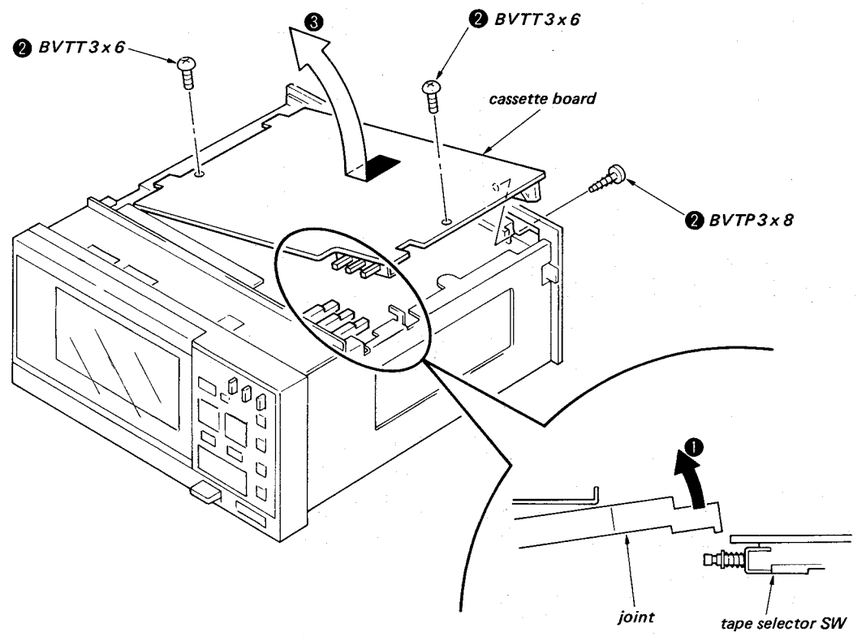
CASSETTE LID



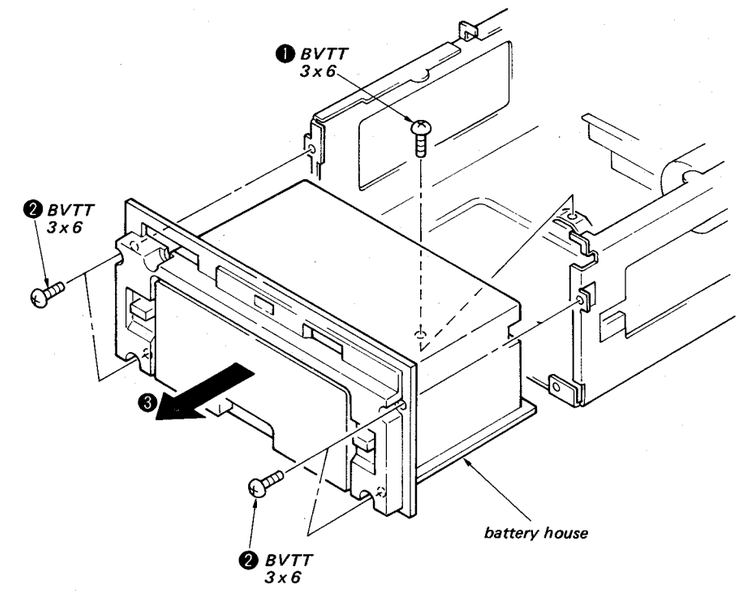
FRONT PANEL



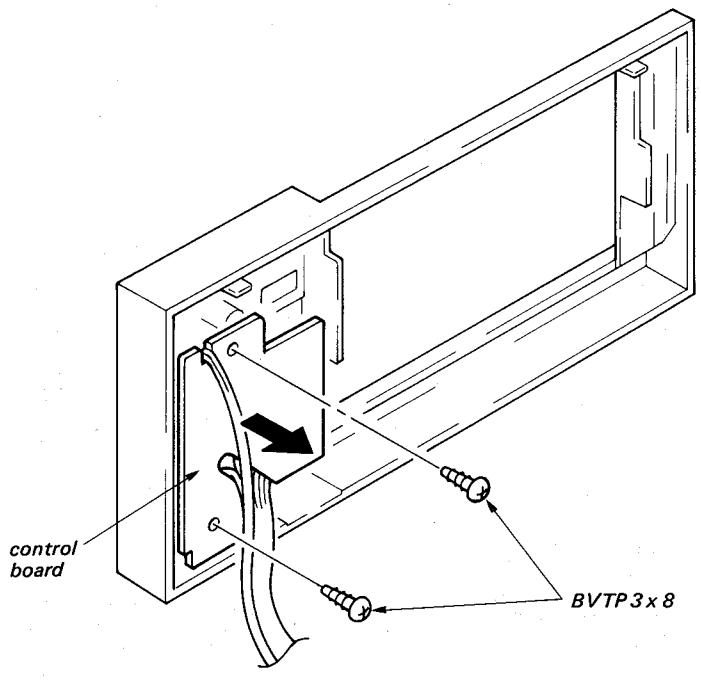
CASSETTE BOARD



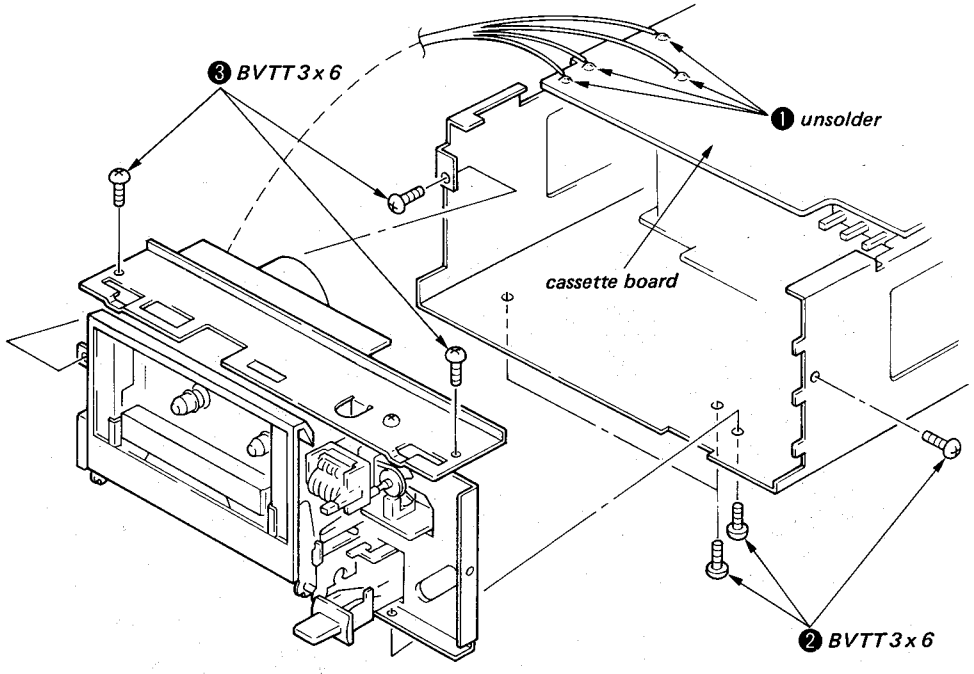
BATTERY HOUSE



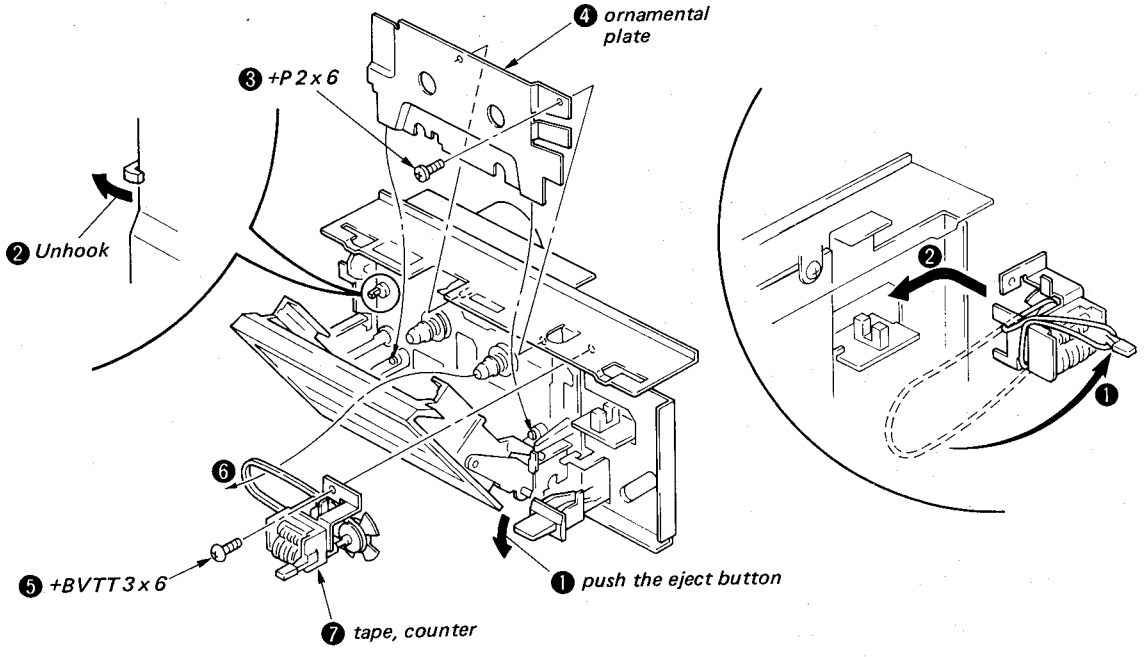
CONTROL BOARD



MECHANISM BLOCK (1)

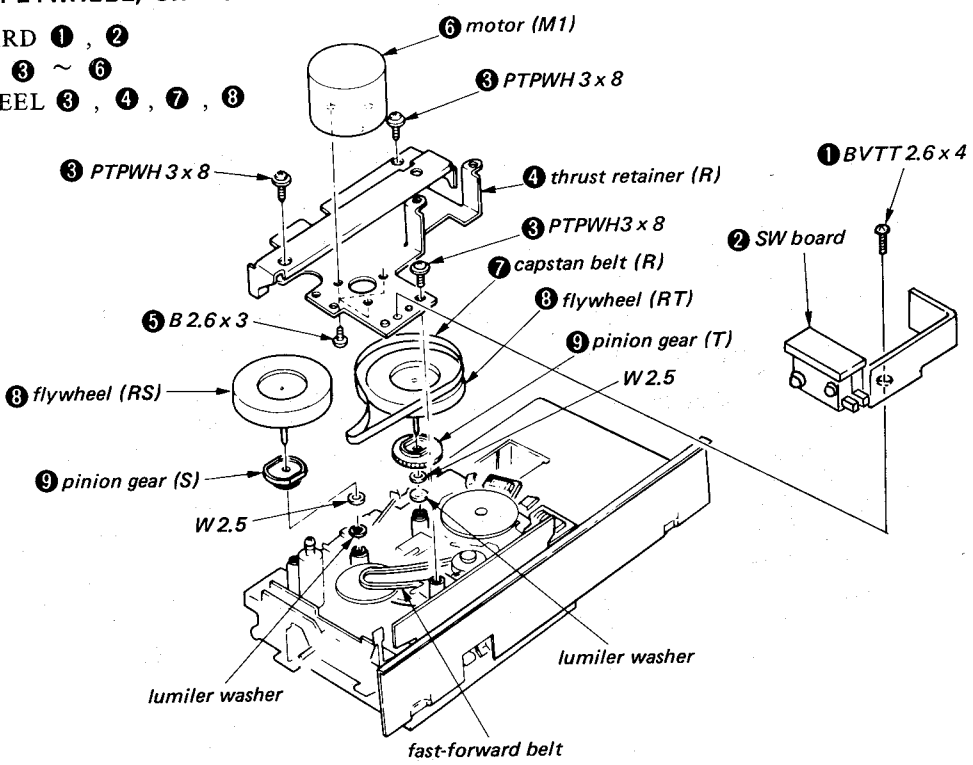


MECHANISM BLOCK (2)

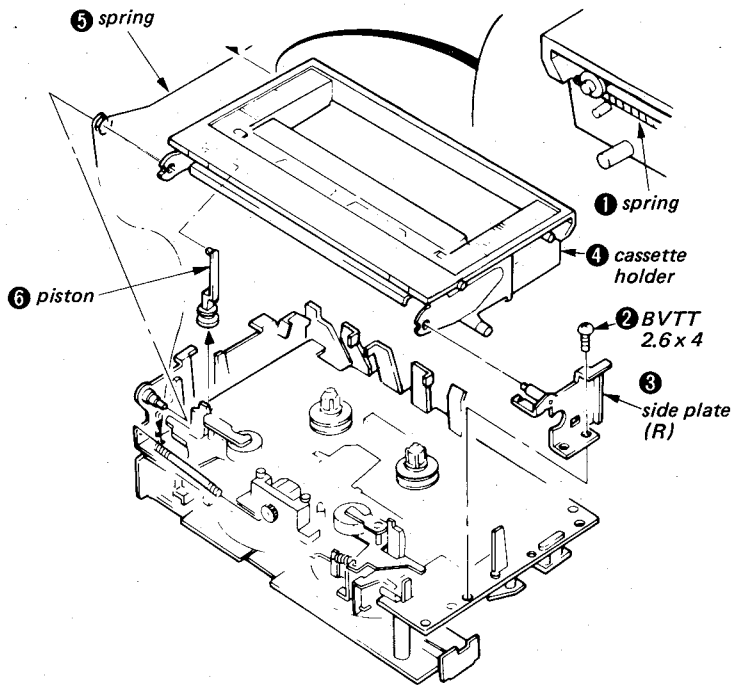


MOTOR, FLYWHEEL, SW BOARD

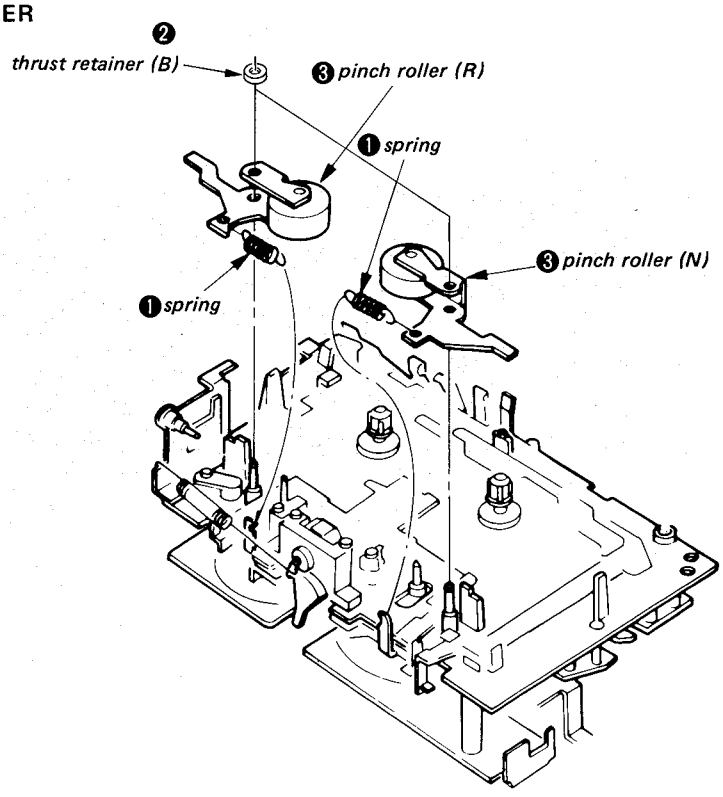
SW BOARD ❶ , ❷
MOTOR ❸ ~ ❻
FLYWHEEL ❸ , ❹ , ❼ , ❽



CASSETTE HOLDER



PINCH ROLLER



SECTION 3
ADJUSTMENTS

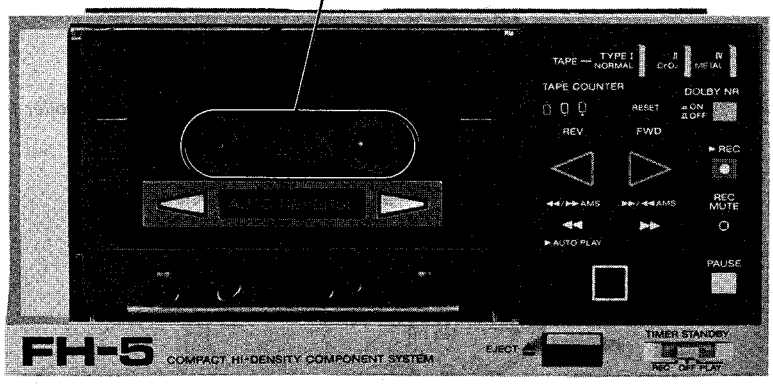
3-1. MECHANICAL ADJUSTMENTS

PRECAUTION

1. Clean the following parts with a denatured-alcohol-moistened swab:
   - record/playback head
   - erase head
   - capstan
   - pinch roller
   - rubber belts
   - idlers
2. Demagnetize the record/playback head with a head demagnetizer.
3. Do not use a magnetized screwdriver for the adjustments.
4. After the adjustments, apply suitable locking compound to the parts adjusted.
5. The adjustments should be performed with the rated power supply voltage (dc 10 V) unless otherwise noted.

Torque Measurement

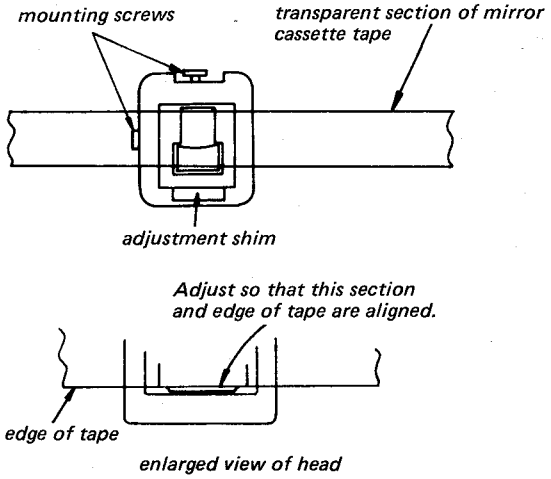
Torque	Torque meter	Meter reading
FWD	CQ-102C	28 – 60 g·cm (0.39 – 0.83 oz·inch)
FWD Back tension	CQ-102C	2 – 7 g·cm (0.03 – 0.1 oz·inch)
REV	CQ-102R	28 – 60 g·cm (0.39 – 0.83 oz·inch)
REV Back tension	CQ-102R	2 – 8 g·cm (0.03 – 0.1 oz·inch)
FF, REW	CQ-201B	80 – 165 g·cm (1.1 – 2.28 oz·inch)



Head Height Adjustment

The following adjustments should be made when the record/playback head is replaced.

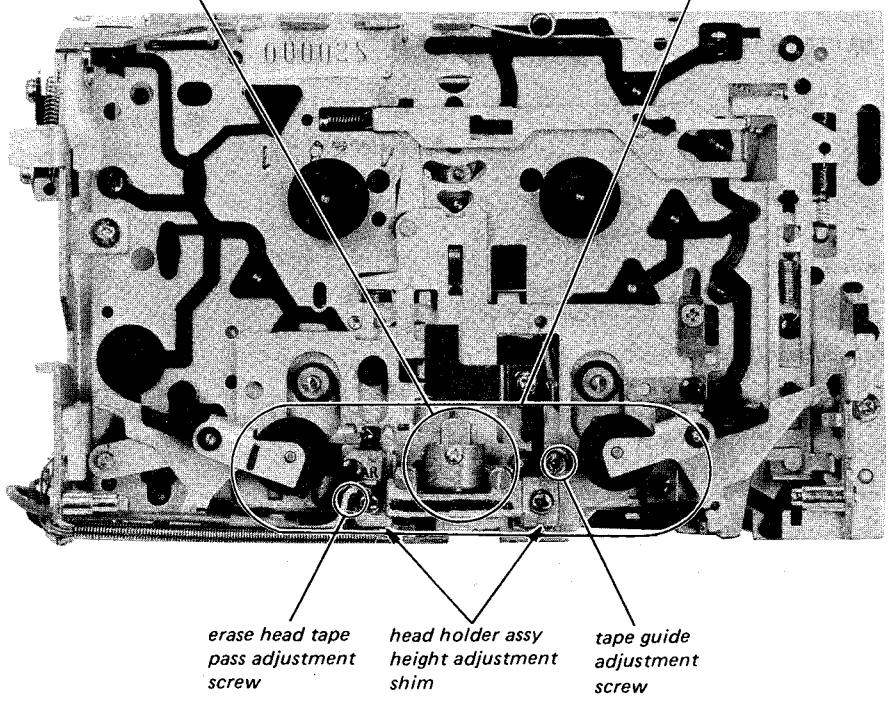
1. The head should be made after removing the head pad of the mirror cassette tape.
2. Using the leader section of the mirror cassette tape, adjustments are made by changing the adjusting shim so that the core and the edge of the tape become as shown in the illustration below when the tape is moved across the head.



Tape Path Adjustment

When assembling the erase head and head holder, and when replacing the tape guide (L), be sure to perform the following adjustments.

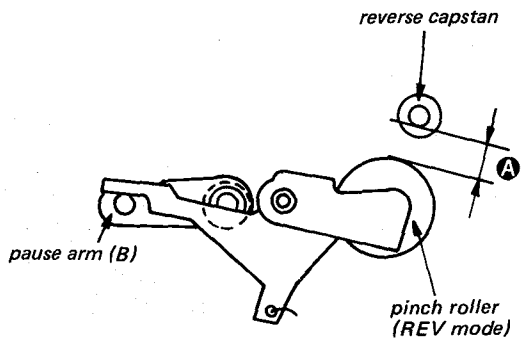
1. Using a mirror cassette, adjust each of the adjustment screws until there is no tape curling.
2. Perform adjustments by changing the height adjustment shim of the head holder assembly and the height adjustment shim of the record/playback head, so that the core of the record/playback head is positioned correctly for both FWD and REV.

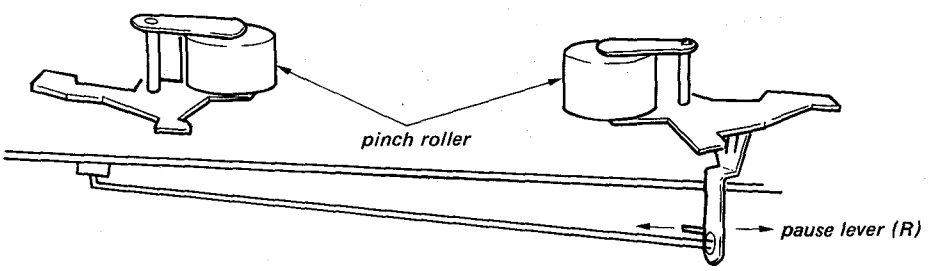


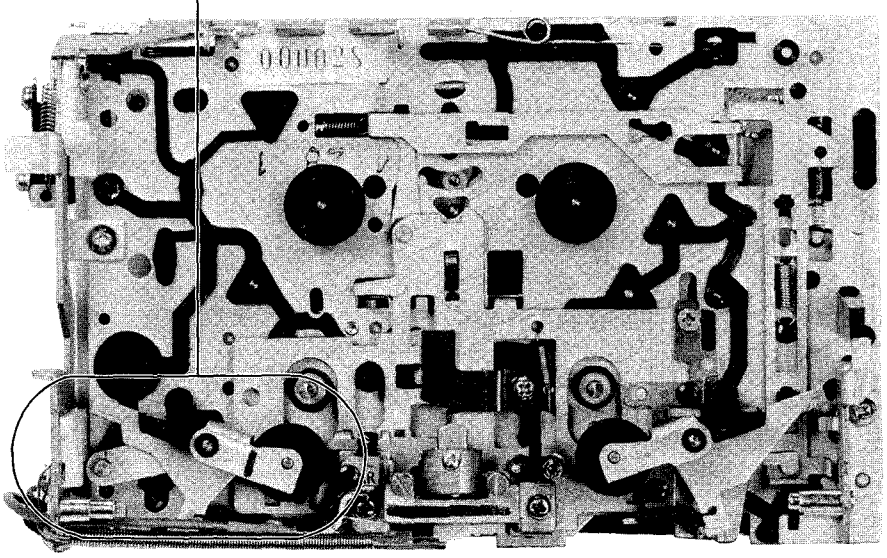
Pause Arm Position Adjustment

1. Mode: reverse pause.
2. Bend pause lever (R) so that the distance of Ⓐ is within the specification.

Specification: 0.5 ~ 1.0 mm

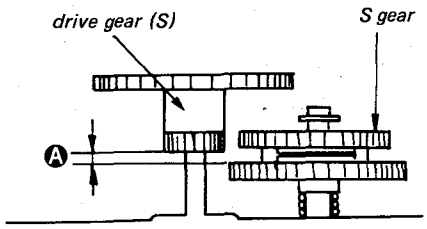


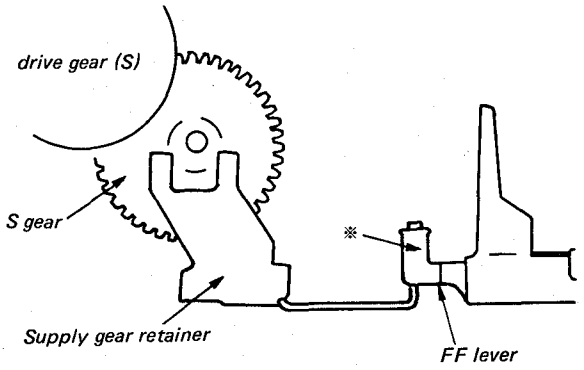


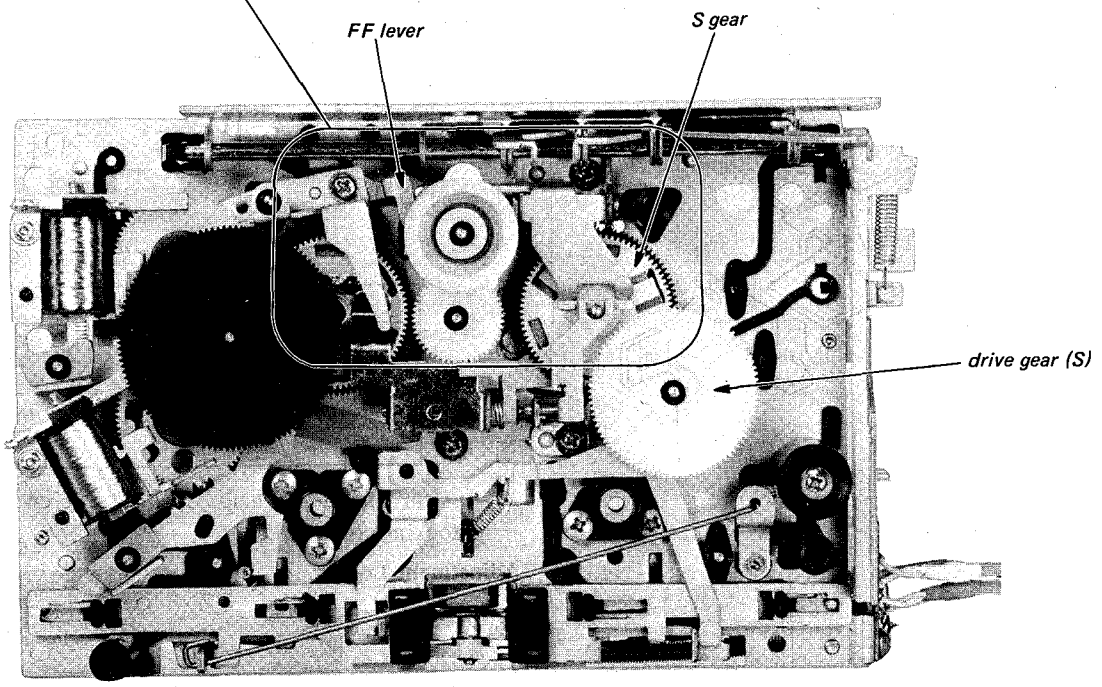


Supply Gear Retainer Position Adjustment

1. Mode: reverse pause.
2. Bend the FF lever at the place indicated by the asterik (※) to make adjustments so that the clearance of Ⓐ is 1 ±0.5 mm.
3. After completing this adjustment, remove the shorting wire.



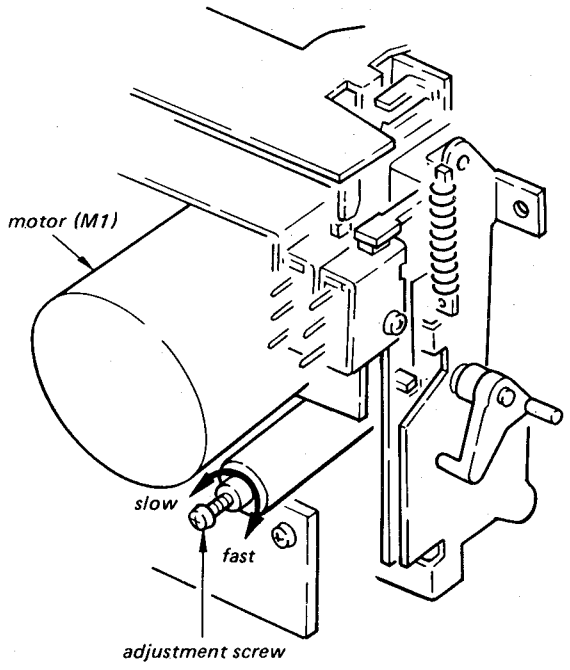




Cassette Holder Opening Speed Adjustment

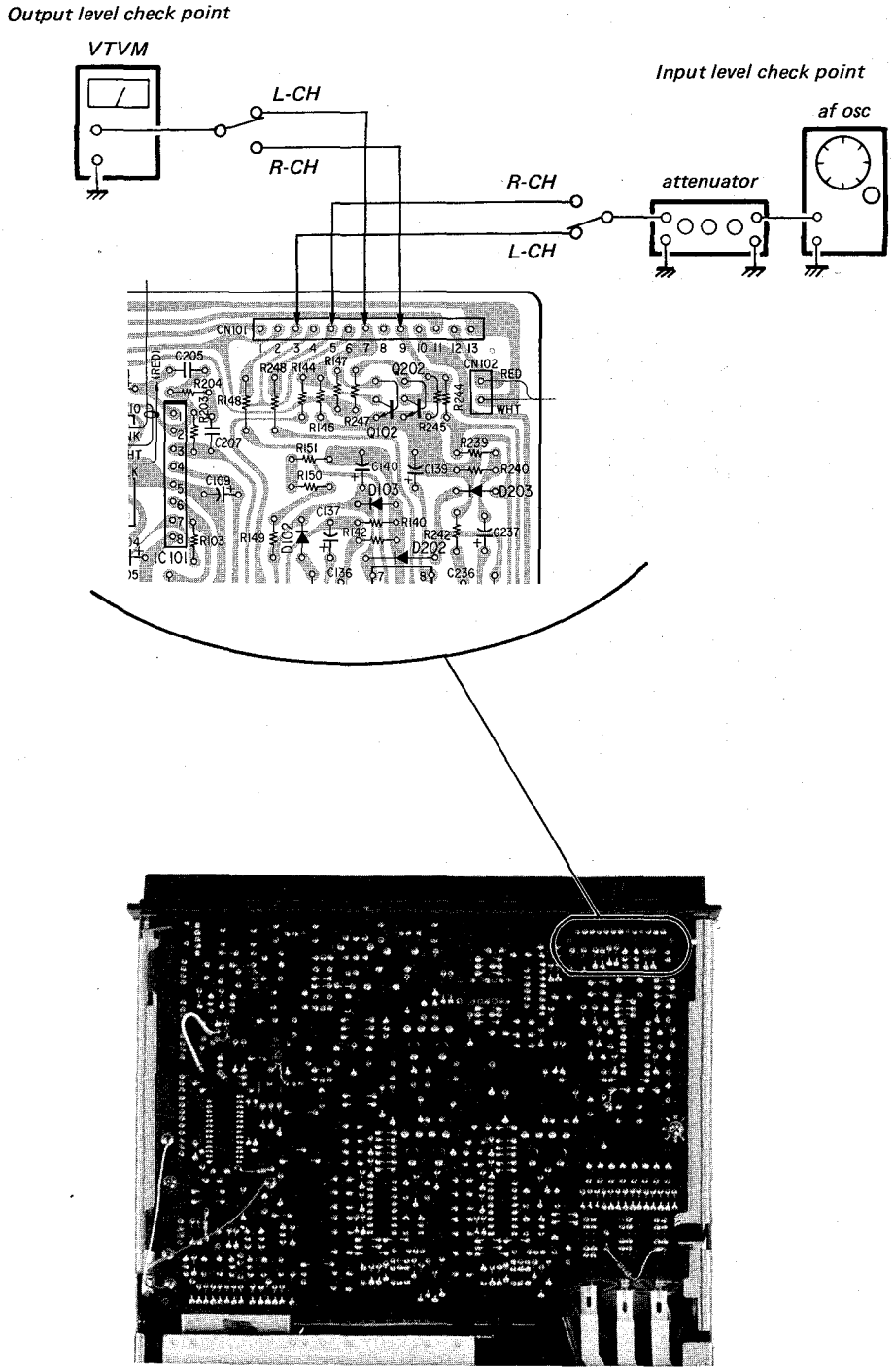
1. Insert a CHF-90 or equivalent tape (in terms of weight).
2. Adjust the adjustment screw so that the opening time required for the cassette holder is 0.4 – 2.5 seconds when the EJECT button is depressed.

Adjustment Location:



3-2. ELECTRICAL ADJUSTMENTS

Note: The adjustment should be performed in the order given in this service manual. (Playback section may be adjusted earlier than record section.)
The adjustments should be performed for both L-CH and R-CH.



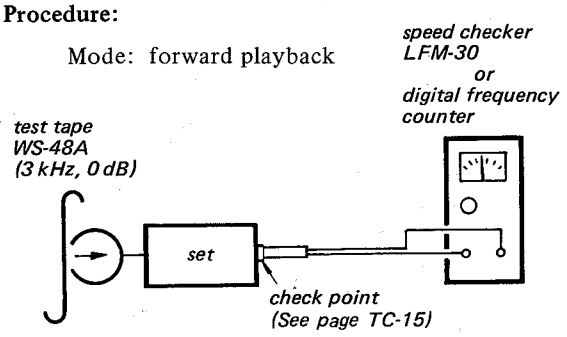
Tape Speed Adjustment

Setting:

TAPE switch: NORMAL
DOLBY NR switch: OFF

Procedure:

Mode: forward playback

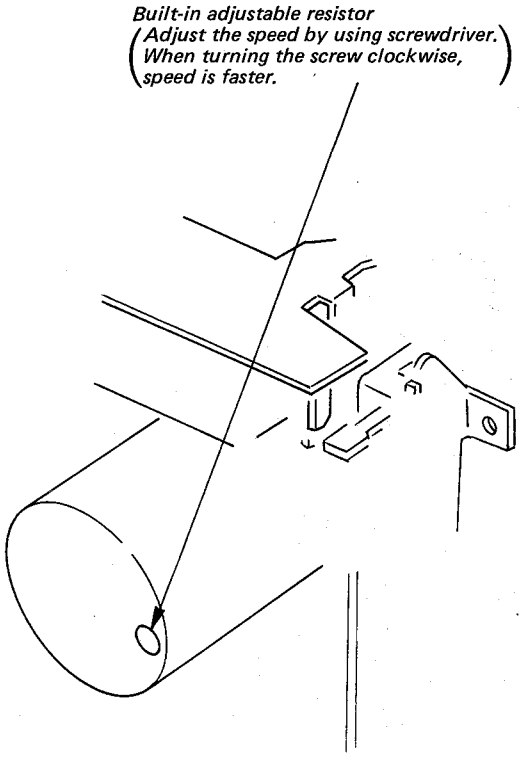


Specifications:

Speed checker	Digital frequency counter
±0.5%	2,985 – 3,015 Hz

Frequency difference between the beginning and the end of the tape should be within 1% (30 Hz).

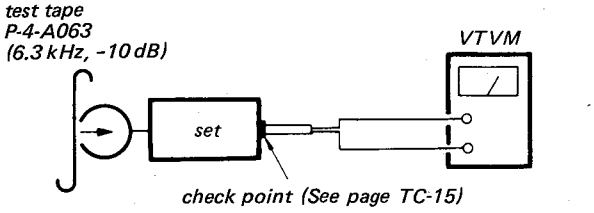
Adjustment Location: Motor (M1)



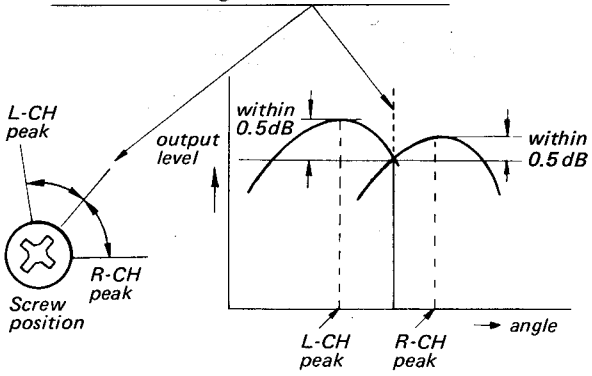
Forward Record/playback Head Azimuth Adjustment

Procedure:

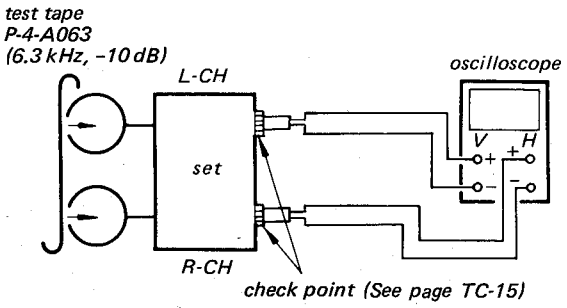
1. Mode: forward playback

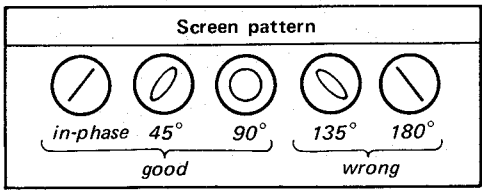


2. Turn the adjustment screw for the maximum output levels. If these levels do not match, turn the adjustment screw until both of output levels match together within 0.5 dB.



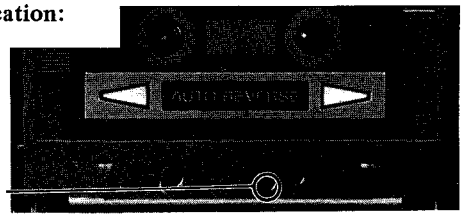
3. Pahse Check
Mode: forward playback





4. After the adjustment, lock the screws with locking compound.

Adjustment Location:

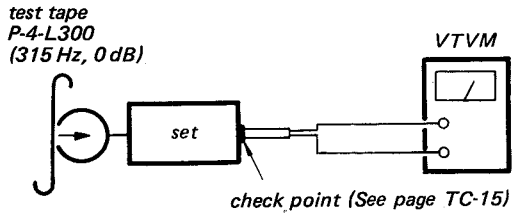


Playback Level Adjustment

Setting:

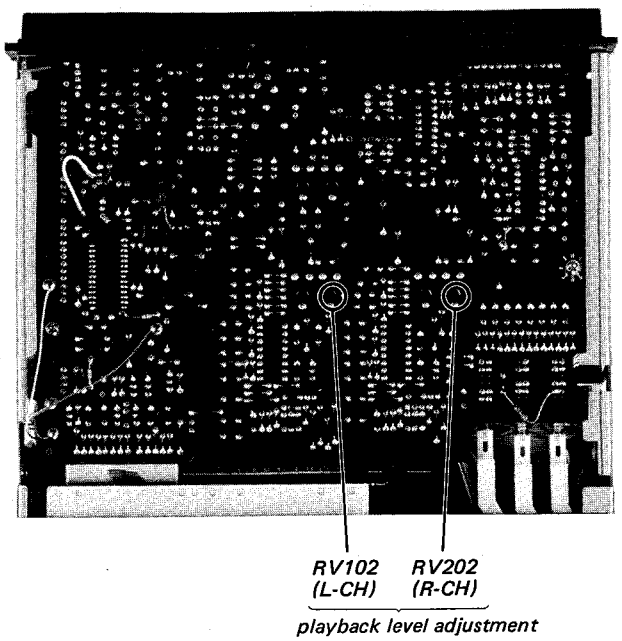
DOLBY NR switch:	OFF
TAPE switch:	NORMAL

Procedure:



Adjust RV102 (L-CH) and RV202 (R-CH) to obtain 0.16 – 0.14 V (–13.5 – –14.5 dB) on the VTVM.
Check that the output level does not change in playback mode while changing the mode from playback to stop several times.

Adjustment Location: CASSETTE board



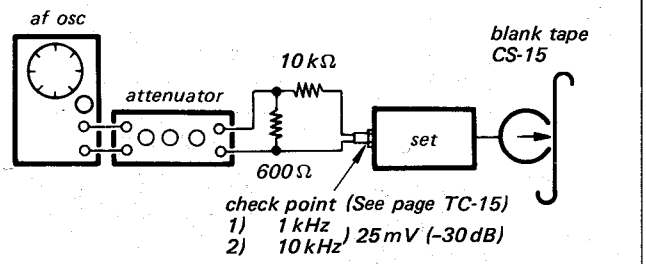
Record Bias Adjustment

Setting:

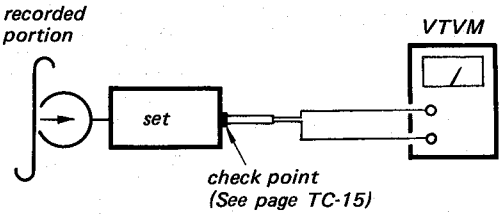
DOLBY NR switch:	OFF
TAPE switch:	NORMAL
ISS switch:	1

Procedure:

1. Mode: record

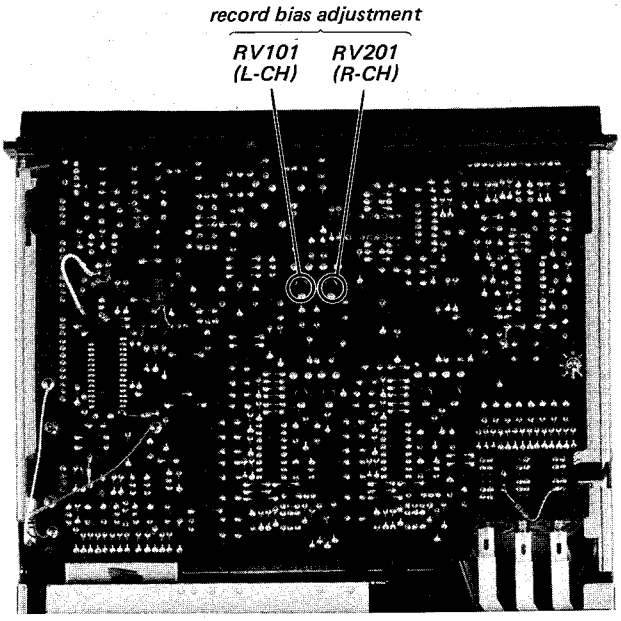


2. Mode: playback



Adjust RV101 (L-CH), RV201 (R-CH) so that the measurement point level of 10 kHz signal is 0 dB ±1 dB relative to that of 1 kHz.
If necessary, repeat the steps given above.

Adjustment Location: CASSETTE board



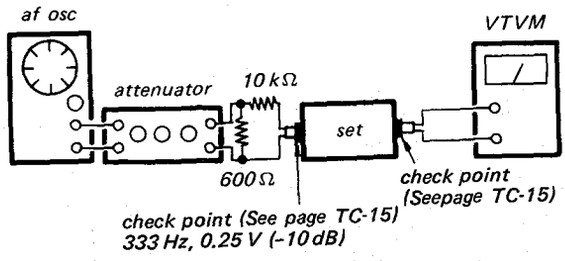
Record Level Adjustment

Setting:

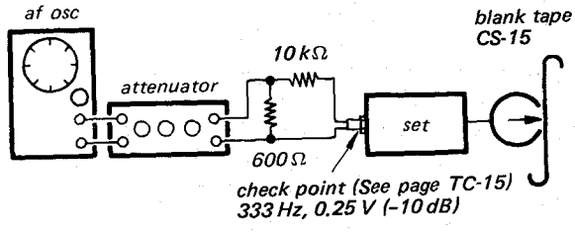
DOLBY NR switch:	OFF
TAPE switch:	NORMAL
ISS switch:	1

Procedure:

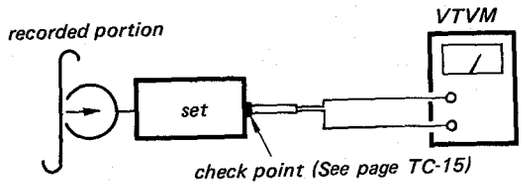
1. Mode: record



2. Mode: record

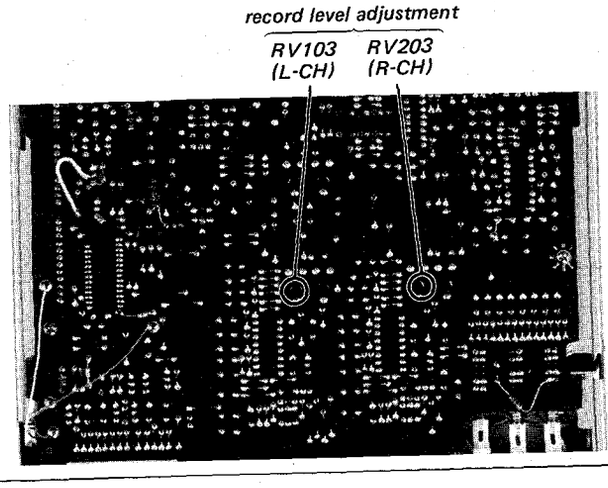


3. Mode: playback



4. Adjust RV103 (L-CH) and RV203 (R-CH) so that playback output level of step 3 is 0 ±0.5 dB relative to that of step 1.

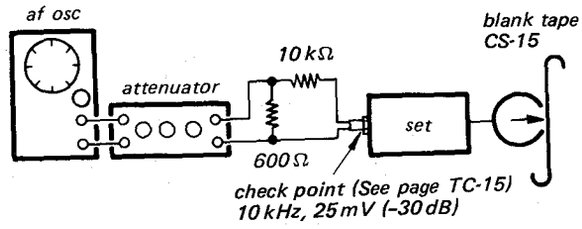
Adjustment Location: CASSETTE board



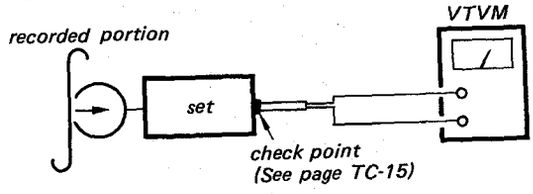
Reverse Playback Head Azimuth Adjustment

Procedure:

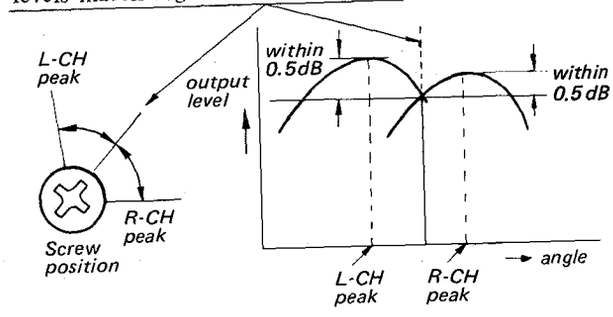
1. Mode: record



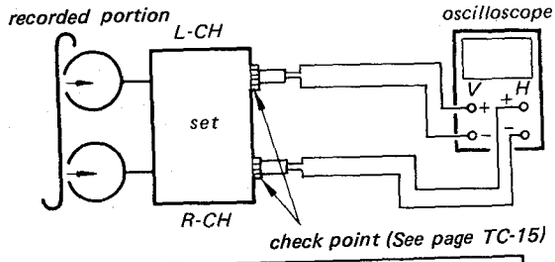
2. Mode: reverse playback
   Turn over the tape, and playback the tape recorded in step 1.

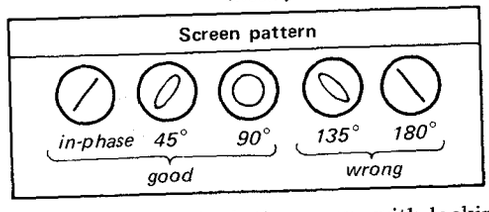


3. Turn the adjustment screw for the maximum output levels. If these levels do not match, turn the adjustment screw until both of output levels match together within 0.5 dB.



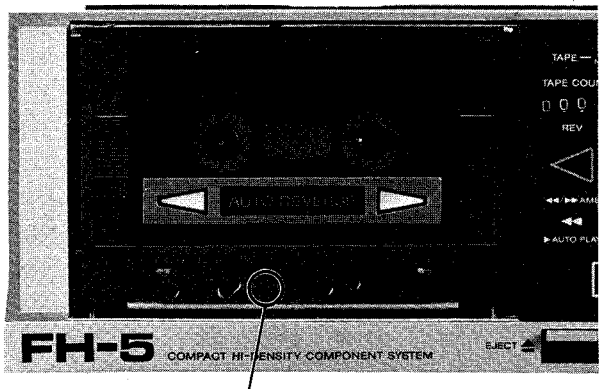
4. Phase Check
   Mode: reverse playback





5. After adjustment, lock the screws with locking compound.

Adjustment Location:



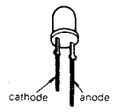
Reverse Playback
Head Azimuth Adjustment

● Semiconductor Lead Layouts

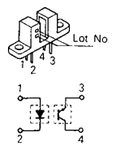
1S1555
1SS202-1
HZ6C2L
HZ7B2L
HZ11B2L



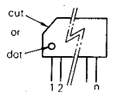
SLR-34DC5
SLR-34URC5



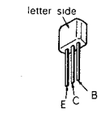
SPI201-20



LA3160



2SA1175
2SC2785



2SC2603



2SD1406



2SD774



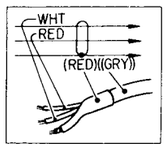
CX174A
LA3220



(Top view)

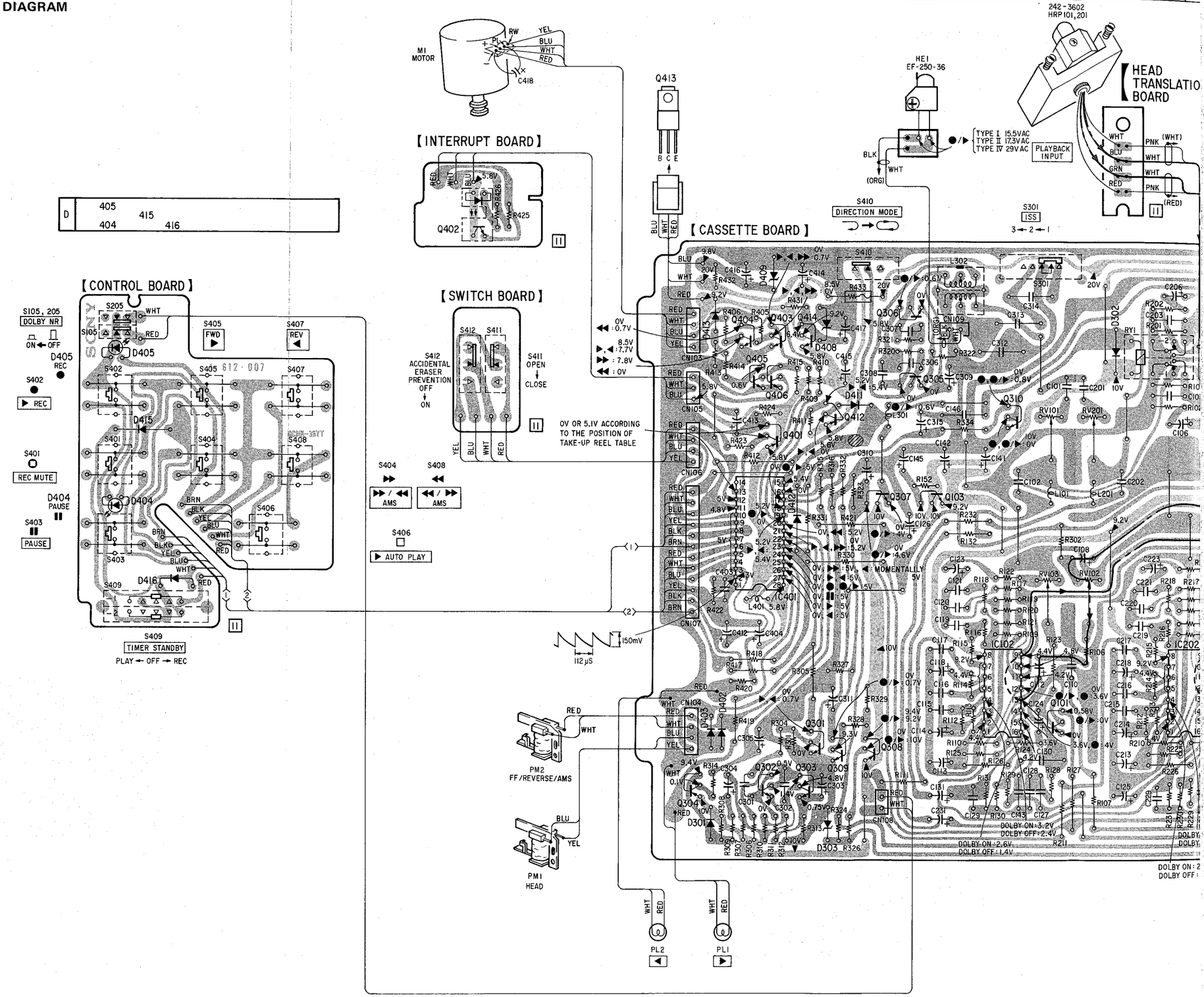
Note:

- Color code of sleeving over the end of the jacket.



- ○— : parts extracted from the component side.
- ●— : parts extracted from the conductor side.
- [ ]— : indicates side identified with part number.
- ▒▒ : B + pattern
- ▬▶▬ : signal path
- ▬▶▬ : L-CH signal path
- ▬▶▬ : R-CH signal path

4-1. MOUNTING DIAGRAM



【CASSETTE BOARD】

【HEAD TRANSLATION BOARD】

【INTERRUPT BOARD】

【SWITCH BOARD】

M1 MOTOR

HE1 EF-250-36

242-3602 HRP101, 201

S410 DIRECTION MODE

S301 ISS

S404 AMS

S408 AMS

S406 AUTO PLAY

S412 ACCIDENTAL ERASER PREVENTION OFF ON

S411 OPEN CLOSE

0V OR 5.1V ACCORDING TO THE POSITION OF TAKE-UP REEL TABLE

TYPE I 15.5VAC
TYPE II 17.3VAC
TYPE IV 29VAC
PLAYBACK INPUT

TO TA-38

PLAYBACK OUTPUT

DRY BATTERY SIZE "D" (IEC DESIGNATION R20 10PCS, 15V)

PM2 FF/REVERSE/AMS

PM1 HEAD

PL2

PL1

S101-1,-2 S201-1,-2 TAPE
TYPE I NORMAL
ON OFF

S102-1,-2 S202-2 TAPE
TYPE II CrO2
ON OFF

S103-1,-2 S203-1 TAPE
TYPE IV METAL
ON OFF

(CHASSIS)

IC, Q	D
413	
402	
	409
306 102, 202	413 408
404, 403, 414 IC101	302
	203
405, 406, 305	103
	102
412 310	411, 202
401 IC103	
307, 103	
	412
IC401	101
IC102, IC202	
101, 201	403, 402
301, 309, 308	
304, 302, 303	
	301, 303
IC, Q	D

4-2. SCHEMATIC DIAGRAM

【CASSETTE BOARD】

IC101 LA3160 EQ AMP

IC102, 202 CX-174A DOLBY/LINE AMP/RECORD AMP

Q101, 201 2SC2785 RECORD MUTING

IC103 LA3220 AUTOMATIC RECORDING LEVEL CONTROL

Q102, 202 2SC2 PLAYBACK MUTI

242-3602 HRP101

242-3602 HRP201

HE 1 EF-250-36

PLAYBACK LEVEL(L)

PLAYBACK LEVEL(R)

RECORD BIAS

REC PB

ON OFF TAPE

TYPE I NORMAL

TYPE II CrO2

TYPE IV METAL

TYPE I 15.5V AC TYPE II 17.3V AC TYPE IV 29V AC

【CONTROL BOARD(1/3)】

S105 DOLBY NR

S205 DOLBY NR

INPUT AMP SWITCH

VARIABLE RESISTOR

OVERSHOOT LIMITER

BIAS CIRCUIT

V/I CONVERTER

DETECTOR

SENSING AMP

OVERSHOOT AMP

DOLBY ON: 2.6V DOLBY OFF: 1.4V

DOLBY ON: 3.2V OFF: 2.4V

RECORD LEVEL (L)

RECORD LEVEL (R)

RECORD AMP

R-CH

L-CH

DI02, 103, 202, 203 ISS202-1

DI01 ISS202-1

D302 ISS202-1

D301 ISS202-1

Q310 2SC2785 10V RELAY DRIVE

D303 HZ9A2L REGULATOR

D404 SLR34DC5 D405 SLR34URC5

Q304 2SA1175 AMS DET

Q305, 306 2SC2603 BIAS OSC

Q307 2SC2603 BIAS OSC SWITCH

Q308 2SA1175 Q309 2SC2785 BIAS OSC SWITCH CONTROL

Q301 2SC2785 AMS MUTING

Q302, 303 2SC2785 AMS DET

Q412 2SA1175 LINE MUTE SWITCHING

D411, 412 ISS202-1

Q401 2SA1175 SWITCHING

Q402 SPI 201-20 SHUT-OFF DETECTOR

IC401 TC9310N-47 SYSTEM CONTROL

REC LAMP
REC MUTE
AMS IN
BIAS
PAUSE LAMP
TIMER
FAST-REVERSE
REVERSE
STOP
FWD
FF
PAUSE
REC MUTE
EJECT
REC

FAST-RVERSE MOTOR
FWD MOTOR
PM2
PM1
FWD LAMP
REVERSE LAMP
SHUT-OFF

S410 DIRECTION MODE

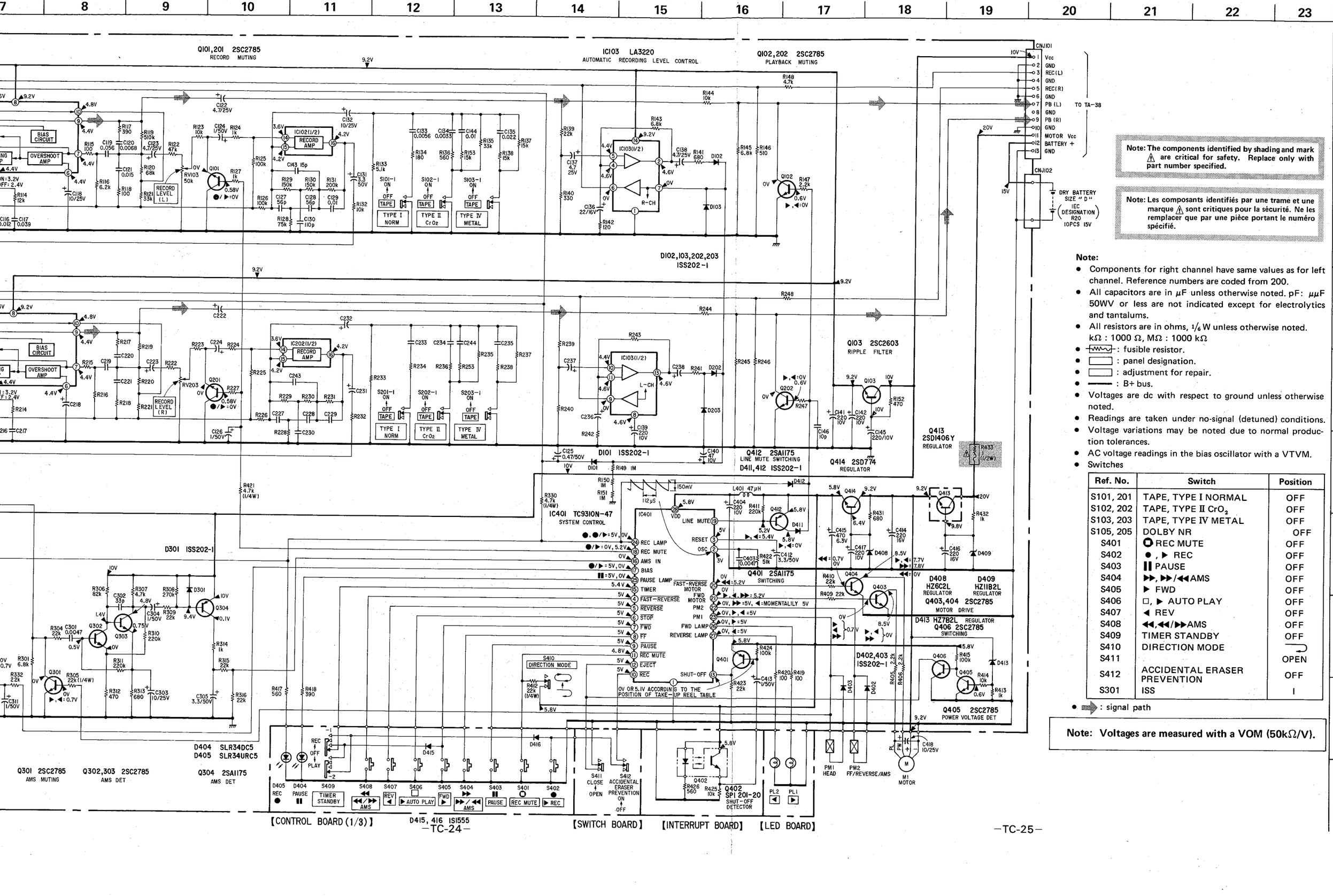
0V OR 5.1V ACCORDING TO THE POSITION OF TAKE-UP REEL TABLE

S301 ISS

S401 REC MUTE
S402 REC
S403 PAUSE
S404 FWD ▶
S405 ▶▶/◀◀ AMS
S406 ▶ AUTO PLAY
S407 REV ◀
S408 ◀◀/▶▶ AMS
S409 TIMER STANDBY
S411 CLOSE OPEN
S412 ACCIDENTAL ERASER PREVENTION ON OFF

【CONTROL BOARD (1/3)】 D415, 416 IS1555

【SWITCH BOARD】 【INTERRUPT BOARD】 【LED BOAR



Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Note: Les composants identifiés par une trame et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Note:

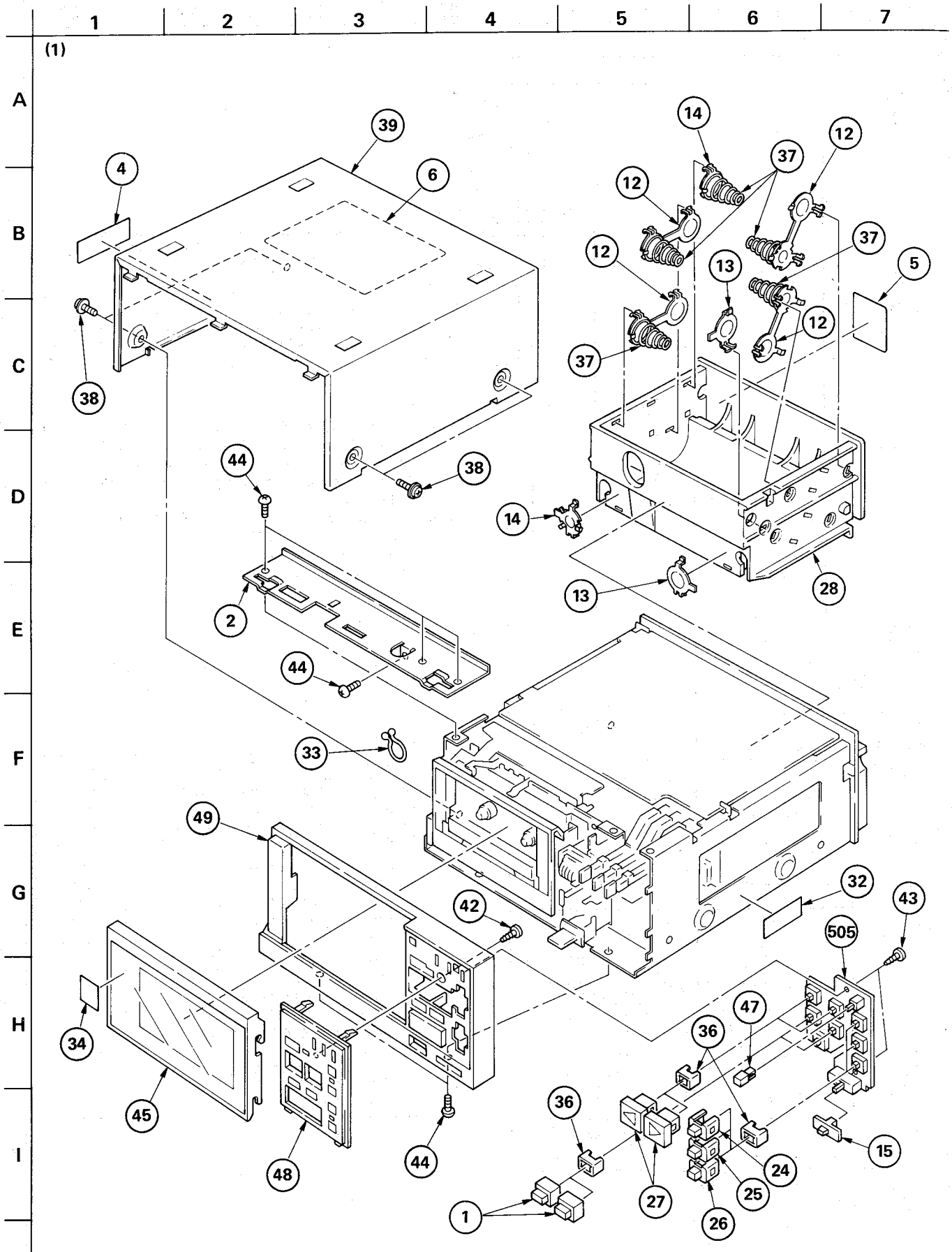
- Components for right channel have same values as for left channel. Reference numbers are coded from 200.
- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in ohms, 1/6 W unless otherwise noted. kΩ : 1000 Ω, MΩ : 1000 kΩ
- ⎓: fusible resistor.
- ▭ : panel designation.
- ▭ : adjustment for repair.
- ——— : B+ bus.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken under no-signal (detuned) conditions.
- Voltage variations may be noted due to normal production tolerances.
- AC voltage readings in the bias oscillator with a VTVM.
- Switches

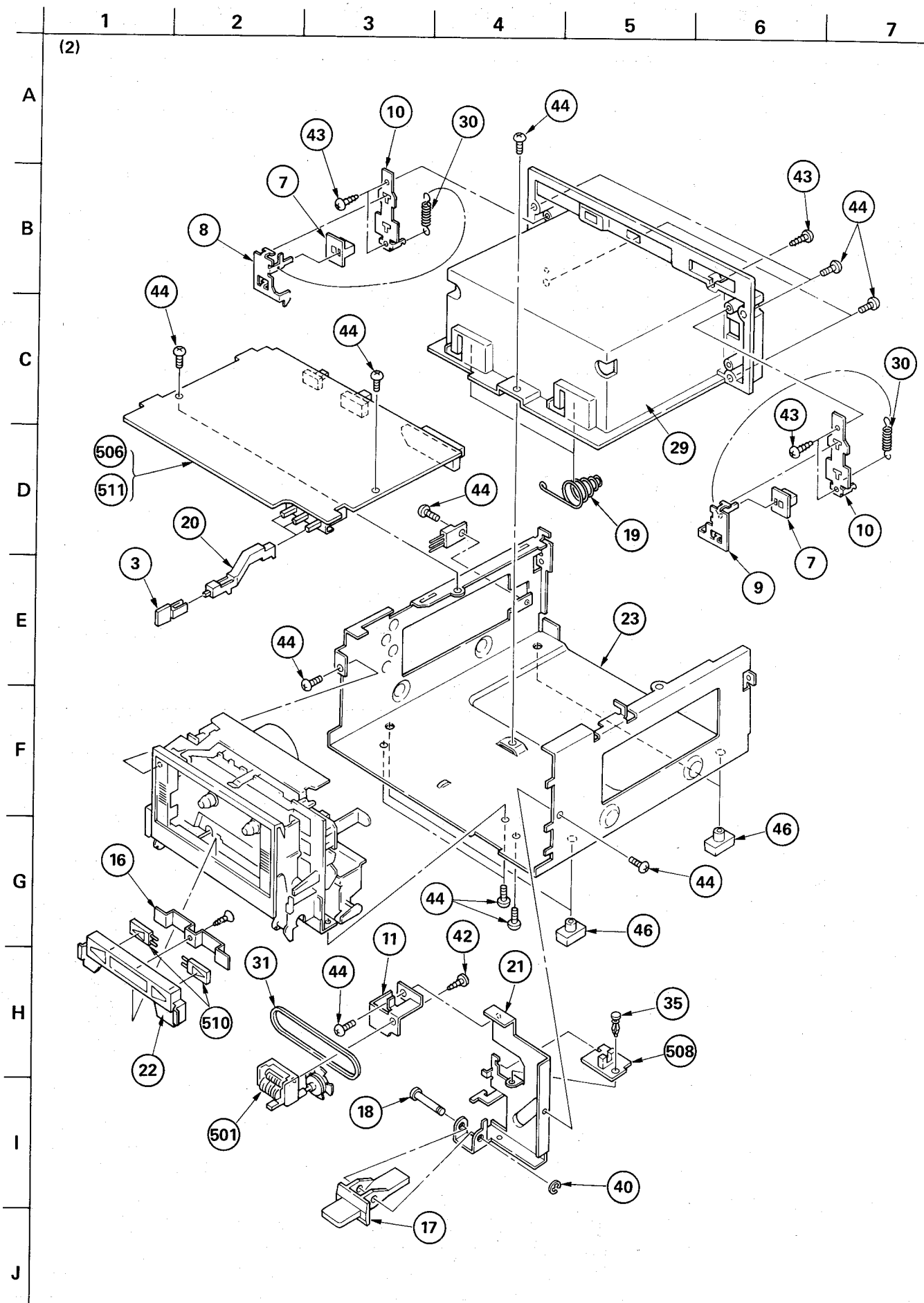
Ref. No.	Switch	Position
S101, 201	TAPE, TYPE I NORMAL	OFF
S102, 202	TAPE, TYPE II CrO_2	OFF
S103, 203	TAPE, TYPE IV METAL	OFF
S105, 205	DOLBY NR	OFF
S401	⭘ REC MUTE	OFF
S402	●, ▶ REC	OFF
S403	❚❚ PAUSE	OFF
S404	▶▶, ▶▶/◀◀AMS	OFF
S405	▶ FWD	OFF
S406	□, ▶ AUTO PLAY	OFF
S407	◀ REV	OFF
S408	◀◀,◀◀/▶▶AMS	OFF
S409	TIMER STANDBY	OFF
S410	DIRECTION MODE	⮌
S411		OPEN
S412	ACCIDENTAL ERASER PREVENTION	OFF
S301	ISS	I

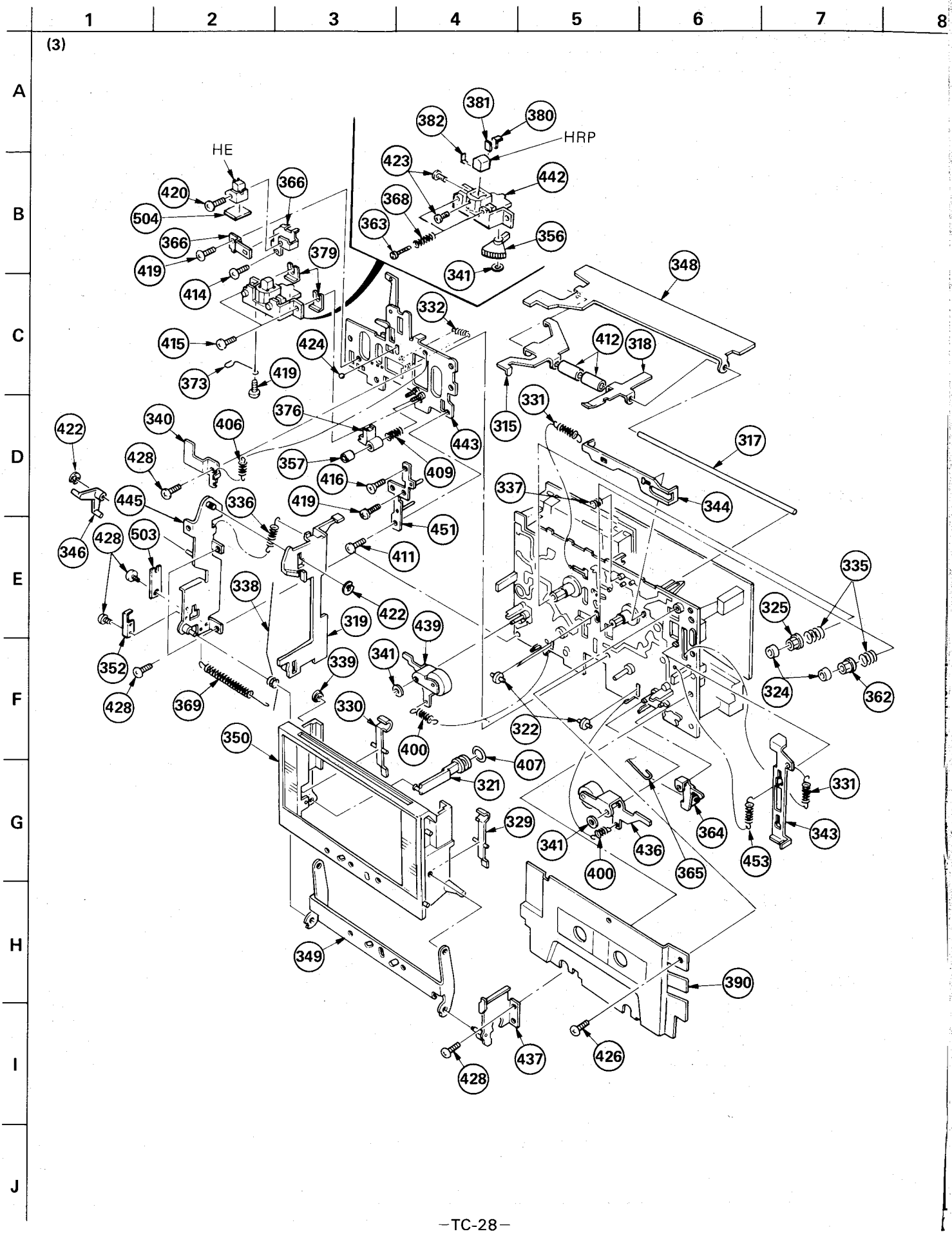
- ➡ : signal path

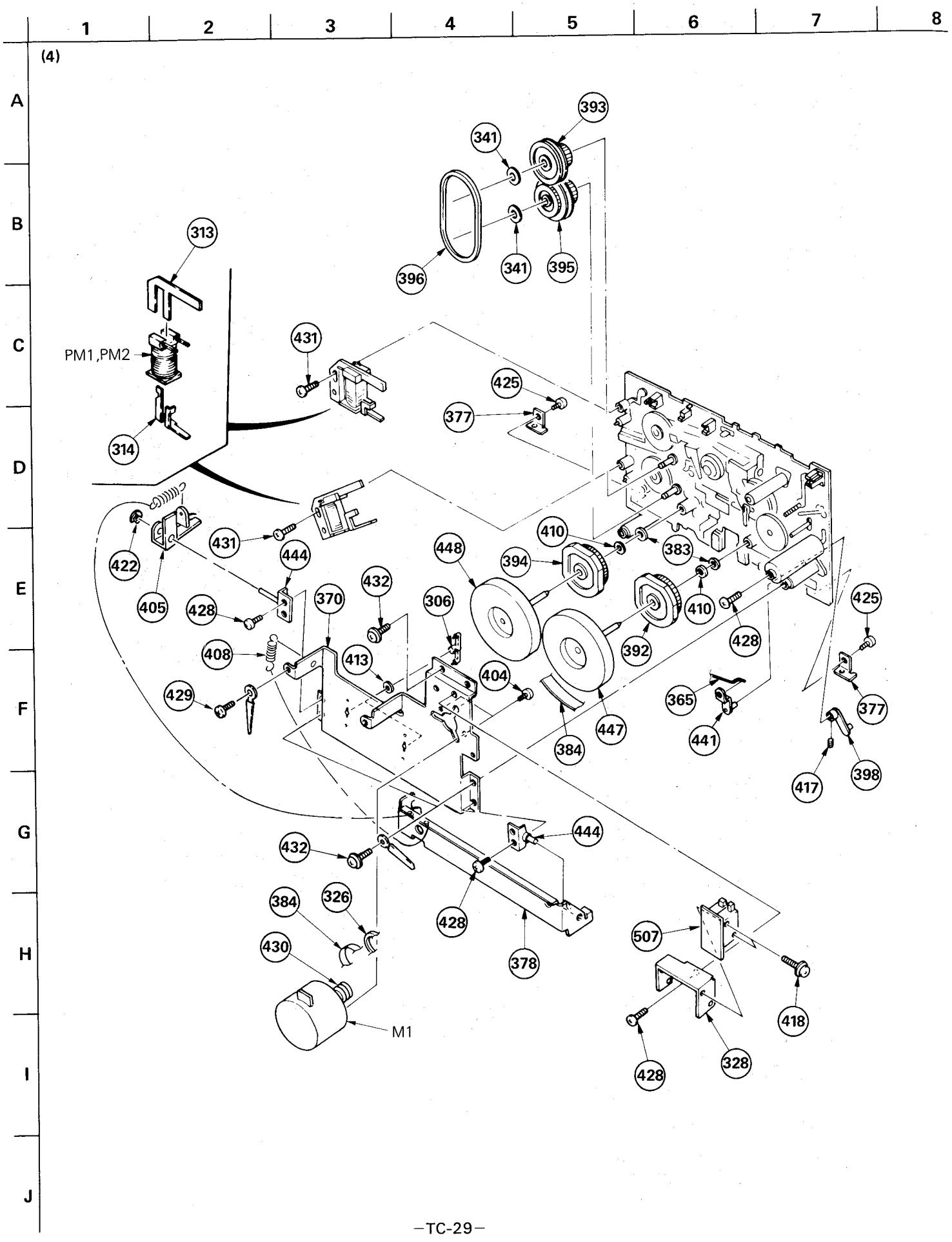
Note: Voltages are measured with a VOM (50kΩ/V).

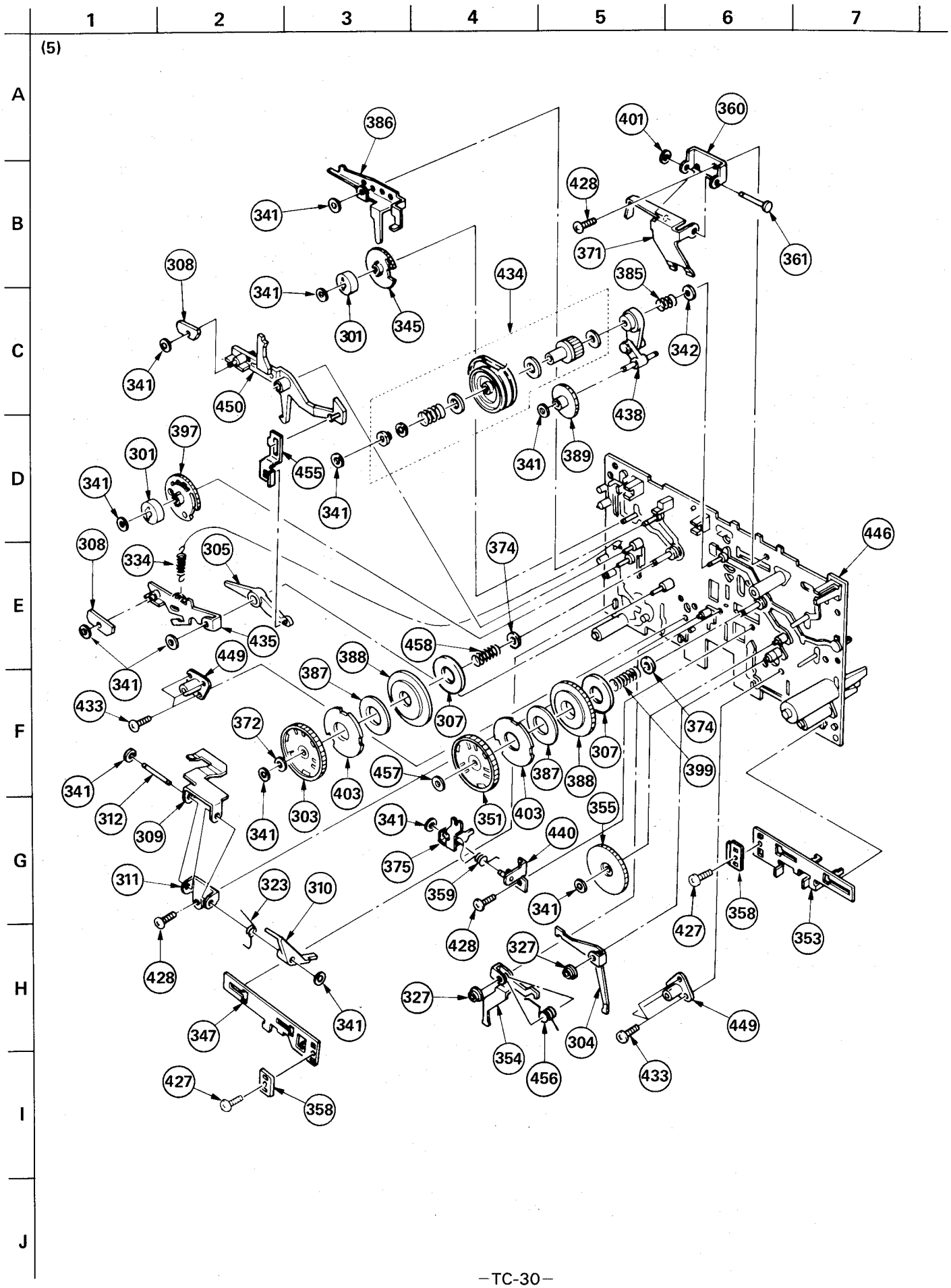
SECTION 5
EXPLODED VIEWS AND PARTS LIST




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GENERAL SECTION

No.	Part No.	Description
1	3-309-102-11	(BLACK)....BUTTON, REW-FF
1	3-309-102-21	(SILVER)...BUTTON, REW-FF
2	♦;3-309-128-00	JOINT
3	3-317-813-01	(SILVER)...KNOB (C)
3	3-317-813-11	(BLACK)....KNOB (C)
4	4-905-327-01	LABLE, MODEL NUMBER (W)
5	3-317-803-01	LABEL, BATTERY
6	3-317-804-01	LABEL, SERVICE
7	3-317-805-01	KNOB, RELEASE
8	♦;3-317-806-01	PLATE (LEFT), LOCK
9	♦;3-317-807-01	PLATE (RIGHT), LOCK
10	♦;3-317-808-01	BRACKET, LOCK PLATE
11	♦;3-317-809-01	BRACKET, COUNTER
12	3-317-810-01	TERMINAL BOARD (A)
13	3-317-811-01	TERMINAL BOARD (B)
14	3-317-812-01	TERMINAL BOARD (C)
15	3-317-813-01	(SILVER).....KNOB, STAND-BY
15	3-317-813-11	(BLACK).....KNOB, STAND-BY
16	♦;3-317-814-01	RETAINER, LED
17	3-317-815-01	(SILVER).....BUTTON, EJECT
17	3-317-815-11	(BLACK).....BUTTON, EJECT
18	♦;3-317-816-01	SHAFT, BUTTON, EJECT
19	3-317-817-01	SPRING
20	♦;3-317-818-01	JOINT
21	♦;3-317-820-01	PANEL, SUB
22	3-317-821-01	(AEP,UK,E).....PLATE, ORNAMENTEL, HEAD
22	3-317-821-11	(US,Canadian)...PLATE, ORNAMENTEL, HEAD
23	♦;3-317-824-01	CHASSIS
24	3-317-825-01	BUTTON, REC
25	3-317-825-11	(BLACK)....BUTTON, RECMUTE
25	3-317-825-31	(SILVER)...BUTTON, RECMUTE
26	3-317-825-21	BUTTON, PAUSE
27	3-317-828-01	(BLACK)....BUTTON, FR
27	3-317-828-11	(SILVER)...BUTTON, FR
28	3-317-829-11	BOX, BATTERY
29	3-317-830-11	HOUSE, BATTERY
28	3-317-829-01	(AEP,UK,E).....BOX, BATTERY
28	3-317-829-11	(US,Canadian)...BOX, BATTERY
29	3-317-830-01	(AEP,UK,E).....HOUSE, BATTERY
29	3-317-830-11	(US,Canadian)...HOUSE, BATTERY
30	3-630-615-XX	SPRING, TENSION
31	3-569-738-00	BELT (53X1.0)
32	3-701-030-00	LABEL, SERIAL NUMBER
33	3-701-417-00	PURSE LOCK (11 DIA.)
34	3-703-709-11	STICKER, SONY SYMBOL (15)
35	4-812-134-00	RIVET NYLON, 3.5
36	4-881-725-00	RING (TACT), FLEXIBLE
37	4-884-910-00	SPRING

GENERAL SECTION

No.	Part No.	Description
38	7-621-772-01	(BLACK)....SCREW M3 CASE
38	4-886-821-11	(SILVER)...SCREW M3 CASE
39	4-902-971-31	(SILVER)...CASE
39	4-902-971-41	(BLACK)....CASE
40	7-624-106-04	STOP RING 3.0, TYPE -E
41	7-685-234-19	SCREW +KTP 2.6X8
42	7-685-533-19	SCREW +BTP 2.6X6 TYPE2 N-S
43	7-685-646-11	SCREW +BVTP 3X8 TYPE2 N-S
44	7-685-871-01	SCREW +BVTT 3X6 (S)
45	X-3317-806-1	(SLIVER)...LID ASSY, CASSETTE
45	X-3317-806-2	(BLACK)....LID ASSY, CASSETTE
46	X-4884-801-0	FOOT ASSY, RUBBER
47	X-4888-101-3	(SILVER)...KNOB (6X7) ASSY, SQUARE
47	X-4888-101-4	(BLACK)....KNOB (6X7) ASSY, SQUARE
48	X-3317-805-1	(SILVER)...PANEL (TC), CASSETTE
48	X-3317-805-2	(BLACK)....PANEL (TC), CASSETTE
49	X-3317-807-1	(SILVER)...PANEL (TC), ASSY
49	X-3317-807-2	(BLACK)....PANEL (TC), ASSY

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COILS

- MMH : mH, UH : μH

SEMICONDUCTORS

In each case, U : μ, for example:
UA···: μA···, UPA···: μPA···, UPC···: μPC, UPD···: μPD···

MECHANISM SECTION

No.	Part No.	Description
301	1-452-202-00	MAGNET
302	.....	
303	3-307-305-00	GEAR (T), REEL
304 ♦	3-307-306-00	LEVER, SELECT, REVERSE
305	3-307-307-00	LEVER, FWD
306	3-307-309-00	RETAINER (A), THRUST
307	3-307-313-00	PLATE, YOKE
308	3-307-315-00	ARBOR, MOVABLE
308	3-307-315-01	ARBOR, MOVABLE
309	3-307-319-00	RETAINER, TAKE-UP GEAR
310	3-307-328-00	LEVER, TAKE-UP SELECTION
311 ♦	3-307-329-00	PLATE, FULCRUM,SELECTION LEVER
312	3-307-330-00	PIN, FULCRUM PLATE
313	3-307-332-00	ARBOR, FIXED
314	3-307-333-00	ARBOR, TRIGGER
315 ♦	3-307-337-00	LEVER, REC DETECTION
316	.....	
317 ♦	3-307-339-00	SHAFT, DETECTION LEVER
318 ♦	3-307-344-00	LEVER, HALF RETAINER
319	3-307-345-00	SLIDER, EJECT
320	.....	
321	3-307-347-00	PISTON
322	3-307-348-00	ROLLER
323	3-307-355-00	SPRING
324	3-307-362-00	CAP, REEL
325	3-307-363-00	CLAW (N), REEL
326	3-307-366-00	BELT, FAST FORWARD
327	3-307-367-00	BUSHING, SELECT LEVER
328 ♦	3-307-370-00	BRACKET, SWITCH
329	3-307-371-00	SPRING (LEFT)
330	3-307-372-00	SPRING (RIGHT)
331	3-307-374-00	SPRING, TENSION
332	3-307-375-00	SPRING, TENSION
333	.....	
334	3-307-378-00	SPRING, TENSION
335	3-307-380-00	SPRING, COMPRESSION
336	3-531-541-00	SPRING, TENSION
337	3-307-382-00	SPRING
338	3-307-383-00	SPRING
339	3-307-390-00	BUSHING, LOADING SPRING
340	3-307-391-00	SPRING
341	3-307-394-00	RETAINER (B), THRUST
342	3-307-395-00	RETAINER, SPRING
343	3-307-397-00	SLIDER, PAUSE
344 ♦	3-307-399-00	SLIDER, MODE
345	3-307-401-00	GEAR, FF CAM

MECHANISM SECTION

No.	Part No.	Description
346	3-307-406-00	LEVER, EJECT
347 ♦	3-307-403-00	SLIDER, FWD
348 ♦	3-307-404-00	RETAINER, DETECTION SWITCH
349 ♦	3-307-405-00	PLATE, FULCRUM,CASSETTE HOLDER
350	3-307-407-31	HOLDER, CASSETTE
351	3-307-412-00	GEAR, TAKE-UP REEL
352	3-307-416-00	STOPPER, LOADING
353 ♦	3-307-420-00	SLIDER, REVERSE
354 ♦	3-307-421-00	LEVER (R), FWD SELECTION
355	3-307-423-00	GEAR (S), DRIVING
356	3-307-427-00	GEAR, HEAD, ROTARY
357	3-307-435-00	NUT, ADJUSTMENT, TAPE GUIDE
358 ♦	3-307-437-00	BLOCK, HEAD SELECTION
359	3-307-441-00	SPRING
360 ♦	3-307-443-00	BRACKET, RETAINER, SUPPLY GEAR
361 ♦	3-307-445-00	SHAFT, RETAINER, SUPPLY GEAR
362	3-307-447-00	CLAW (R), REEL
363	3-307-448-00	SCREW, ADJUSTMENT, AZIMUTH
364 ♦	3-307-449-00	LEVER (R), PAUSE
365 ♦	3-307-450-00	ROD, PULL, PAUSE
366	3-307-457-00	SPRING
367	3-307-458-00	PLATE (L), ADJUSTMENT, HEAD
368	3-307-460-00	SPRING, COMPRESSION
369	3-307-461-00	SPRING, TENSION
370 ♦	3-307-462-00	RETAINER (R), THRUST
371 ♦	3-307-464-00	RETAINER, SUPPLY GEAR
372	3-307-465-00	RETAINER, T SIDE
373 ♦	3-307-466-00	CLAMP
374 ♦	3-307-467-00	RETAINER, SPRING
375	3-307-469-00	LEVER, SELECTION, SUPPLY
376	3-307-470-00	GUIDE (R), TAPE
377 ♦	3-307-472-00	BRACKET, MD
378 ♦	3-307-474-00	LEVER (R2), EJECT
379	3-307-477-01	SEAM (A), HEAD ADJUSTMENT (t=0.1)
379	3-307-477-11	SEAM (A), HEAD ADJUSTMENT (t=0.2)
379	3-307-477-21	SEAM (A), HEAD ADJUSTMENT (t=0.3)
379	3-307-477-31	SEAM (A), HEAD ADJUSTMENT (t=0.4)
379	3-307-477-41	SEAM (A), HEAD ADJUSTMENT (t=0.5)
380	3-307-479-01	SEAM (B), HEAD ADJUSTMENT (t=0.1)
380	3-307-479-11	SEAM (B), HEAD ADJUSTMENT (t=0.2)
380	3-307-479-21	SEAM (B), HEAD ADJUSTMENT (t=0.3)
380	3-307-479-31	SEAM (B), HEAD ADJUSTMENT (t=0.4)
381	3-307-480-00	SEAM, HEAD
382	3-307-481-00	BASE, HEAD
383	3-307-482-00	WASHER, LUMILER
384	3-307-483-00	BELT (R), CAPSTAN
385	3-312-452-00	SPRING, COMPRESSION

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In each case, U : μ, for example:
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MECHANISM SECTION

No.	Part No.	Description
386 ♦	3-307-490-04	LEVER, FF
387	3-307-493-01	SPACER (t=0.1)
387	3-307-493-11	SPACER (t=0.15)
387	3-307-493-21	SPACER (t=0.2)
387	3-307-493-31	SPACER (t=0.25)
387	3-307-493-41	SPACER (t=0.3)
387	3-307-493-51	SPACER (t=0.35)
388	3-307-953-00	MAGNET, REEL TABLE
389	3-307-970-00	GEAR, FR
390	3-307-533-11	PLATE, ORNAMENTAL, MD
391	.....	
392 ♦	3-312-403-00	GEAR (S), PINION
393	3-312-405-00	PULLEY, DRIVING
394	3-312-406-00	GEAR (T), PINION
395	3-312-408-00	GEAR (B), CONVERSION
396	3-312-409-00	BELT, DRIVING
397	3-312-412-00	GEAR (B), CAM, FWD
398 ♦	3-312-428-00	ARM (B), PUASE
399	3-307-471-31	SPRING, COMPRESSION
400	3-312-432-00	SPRING, TENSION
401	3-312-434-00	WASHER, SLIT
402	.....	
403	3-561-827-00	PLATE (A), HYSTERESIS
404	7-621-775-00	SCREW +B 2.6X3
405 ♦	3-312-454-01	LEVER, EJECT
406	3-312-451-00	SPRING, TENSION
407	3-575-392-00	RING, PISTON
408	3-578-393-00	SPRING, TENSION
409	3-644-718-00	SPRING, COMPRESSION
410	3-701-438-11	WASHER, 2.5
411	3-701-467-00	SCREW, LOCK
412	4-855-006-01	SPACER (3X12)
413	3-701-442-21	WASHER, 4.5
414	7-621-255-20	SCREW +P 2X4
415	7-621-770-87	SCREW +P 2.6X5
416	7-621-555-35	SCREW +K 2X5
417	7-621-733-08	SET-SCT, HEX 2X4 FLAT POINT
418	7-621-760-05	+PSW, 2.6X16
419	7-621-772-00	SCREW +B 2X3
420	7-621-772-40	SCREW +B 2X8
421	.....	
422	7-624-105-04	STOP RING 2.3, TYPE -E
423	7-627-552-07	SCREW, PRECISION +P 1.7X2.5
424	7-671-111-11	STEEL, BOUL 1.5MM
425	7-682-546-04	SCREW +BVTT 3X5 (S)
426	7-685-104-29	SCREW +P 2X6 TYPE2 SLIT

MECHANISM SECTION

No.	Part No.	Description
427	7-685-781-04	SCREW +BVTT 2X4 (S)
428	7-685-790-04	SCREW +BVTT 2.6X4 (S)
429	7-685-871-01	SCREW +BVTT 3X6 (S)
430	X-3307-329-1	PULLEY (R), MOTOR
431	7-687-204-21	TOTSU PTPWH 2X6 NON-SLIT, TYPE2
432	7-687-246-21	SCREW, TOTSU PTPWH 3X8, TYPE2
433	7-687-701-39	SCREW, TOTSU BTT 2.6X4
434	A-2142-022-A	PULLEY ASSY, FR
435 ♦	X-3307-305-0	LEVER ASSY, FWD LOCK
436	X-3307-307-6	PINCH ROLLER (N) ASSY
437 ♦	X-3307-310-0	PLATE (RIGHT) ASSY, SIDE
438	X-3307-312-4	LEVER ASSY, FR
439	X-3307-316-3	PINCH ROLLER (R) ASSY
440 ♦	X-3307-317-0	PLATE ASSY, FULCRUM, LEVER
441 ♦	X-3307-319-0	ARM (A) ASSY, PAUSE
442	X-3307-321-0	HOLDER ASSY, HEAD
443	X-3307-323-0	CHASSIS (R) ASSY, HEAD
444 ♦	X-3307-354-1	FULCRUM ASSY, EJECT
445 ♦	X-3307-309-0	PLATE (LEFT) ASSY, SIDE
446	X-3307-331-1	CHASSIS ASSY, MACHANISM
447	X-3307-336-2	FLYWHEEL (RS) ASSY
448	X-3307-337-2	FLYWHEEL (RT) ASSY
449	X-3307-338-0	BEARING ASSY, CAPSTAN
450	X-3307-348-0	LEVER ASSY, FF LOCK
451	X-3307-920-0	PLATE ASSY, ADJUSTMENT
452	.....	
453	3-312-448-00	SPRING, TENSION
455 ♦	3-307-487-00	STOPPER, FR
456	3-312-442-00	SPRING
457	7-623-922-01	WASHER 2.0, NYLONE
458	3-312-430-00	SPRING, COMPRESSION

ELECTRICAL PARTS

Ref.No.	Part No.	Description
501	1-548-563-71	COUNTER, TAPE
502 ♦	1-562-251-00	SOCKET, CONNECTOR 6P
503 ♦	1-608-170-00	PC BOARD, HEAD TRANSLATION
504	1-611-992-11	PC BOARD, HEAD ERASE
505 ♦	1-612-007-11	PC BOARD, CONTROL
506 ♦	1-612-008-11	PC BOARD, CASSETTE
507 ♦	1-612-009-11	PC BOARD, SWITCH
508 ♦	1-612-010-11	PC BOARD, INTERRUPT
509	.....	
510	1-806-779-11	LAMP, LED
511 ♦	A-2010-221-A	MOUNTED PCB, CASSETTE

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ELECTRICAL PARTS

Ref.No.	Part No.	Description			
C101	1-102-975-00	CERAMIC	100PF	10%	50V
C102	1-102-964-00	CERAMIC	36PF	5%	50V
C103	1-102-117-00	CERAMIC	820PF	10%	50V
C104	1-123-328-00	ELECT	4.7MF	20%	25V
C105	1-102-975-00	CERAMIC	100PF	10%	50V
C106	1-123-307-00	ELECT	100MF	20%	10V
C107	1-130-487-00	MYLAR	0.022MF	5%	50V
C108	1-123-379-00	ELECT	0.47MF	20%	50V
C109	1-123-308-00	ELECT	220MF	20%	10V
C110	1-130-479-00	MYLAR	0.0047MF	5%	50V
C111	1-123-382-00	ELECT	3.3MF	20%	50V
C112	1-123-382-00	ELECT	3.3MF	20%	50V
C113	1-123-308-00	ELECT	220MF	20%	10V
C114	1-123-609-00	ELECT	0.33MF	20%	50V
C115	1-130-632-00	FILM	0.1MF	5%	50V
C116	1-130-484-00	MYLAR	0.012MF	5%	50V
C117	1-130-627-00	MYLAR	0.039MF	5%	50V
C118	1-123-356-00	ELECT	10MF	20%	25V
C119	1-130-492-00	MYLAR	0.056MF	5%	50V
C120	1-130-481-00	MYLAR	0.0068MF	5%	50V
C121	1-130-485-00	MYLAR	0.015MF	5%	50V
C122	1-123-328-00	ELECT	4.7MF	20%	25V
C123	1-123-328-00	ELECT	4.7MF	20%	25V
C124	1-123-380-00	ELECT	1MF	20%	50V
C125	1-123-379-00	ELECT	0.47MF	20%	50V
C126	1-123-380-00	ELECT	1MF	20%	50V
C127	1-162-031-00	CERAMIC	56PF	5%	50V
C128	1-162-031-00	CERAMIC	56PF	5%	50V
C129	1-130-483-00	MYLAR	0.01MF	5%	50V
C130	1-161-347-00	CERAMIC	110PF	5%	50V
C131	1-123-382-00	ELECT	3.3MF	20%	50V
C132	1-123-356-00	ELECT	10MF	20%	25V
C133	1-130-480-00	MYLAR	0.0056MF	5%	50V
C134	1-130-477-00	MYLAR	0.0033MF	5%	50V
C135	1-130-487-00	MYLAR	0.022MF	5%	50V
C136	1-123-330-00	ELECT	22MF	20%	16V
C137	1-123-328-00	ELECT	4.7MF	20%	25V
C138	1-123-328-00	ELECT	4.7MF	20%	25V
C139	1-123-308-00	ELECT	220MF	20%	10V
C140	1-123-306-00	ELECT	47MF	20%	10V
C141	1-123-308-00	ELECT	220MF	20%	10V
C142	1-123-308-00	ELECT	220MF	20%	10V
C143	1-162-017-00	CERAMIC	15PF	5%	50V
C144	1-130-483-00	MYLAR	0.01MF	5%	50V
C145	1-123-308-00	ELECT	220MF	20%	10V

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
C301	1-130-479-00	MYLAR	0.0047MF	5%	50V
C302	1-162-025-00	CERAMIC	33PF	5%	50V
C303	1-123-356-00	ELECT	10MF	20%	25V
C304	1-123-380-00	ELECT	1MF	20%	50V
C305	1-123-382-00	ELECT	3.3MF	20%	50V
C306	1-106-188-00	MYLAR	0.0047MF	5%	100V
C307	1-106-188-00	MYLAR	0.0047MF	5%	100V
C308	1-106-194-00	MYLAR	0.0082MF	5%	100V
C309	1-123-381-00	ELECT	2.2MF	20%	50V
C310	1-123-379-00	ELECT	0.47MF	20%	50V
C311	1-123-380-00	ELECT	1MF	20%	50V
C312	1-129-713-00	FILM	0.0082MF	10%	630V
C313	1-129-706-00	FILM	0.0022MF	10%	630V
C314	1-129-705-00	FILM	0.0018MF	10%	630V
C315	1-123-382-00	ELECT	3.3MF	20%	50V
C403	1-130-479-00	MYLAR	0.0047MF	5%	50V
C404	1-123-308-00	ELECT	220MF	20%	10V
C412	1-123-382-00	ELECT	3.3MF	20%	50V
C413	1-123-380-00	ELECT	1MF	20%	50V
C414	1-123-321-00	ELECT	220MF	20%	16V
C415	1-123-298-00	ELECT	470MF	20%	6.3V
C416	1-123-321-00	ELECT	220MF	20%	16V
CNJ101	1-562-068-00	SOCKET, CONNECTOR 13P			
♦CNJ102	1-560-060-00	PIN, CONNECTOR 2P			
♦CNJ103	1-560-062-00	PIN, CONNECTOR 4P			
♦CNJ104	1-560-062-00	PIN, CONNECTOR 4P			
♦CNJ105	1-560-061-00	PIN, CONNECTOR 3P			
♦CNJ106	1-560-062-00	PIN, CONNECTOR 4P			
♦CNJ107	1-560-230-00	PIN, CONNECTOR 12P			
♦CNJ108	1-560-060-00	PIN, CONNECTOR 2P			
♦CNJ109	1-560-060-00	PIN, CONNECTOR 2P			
♦CNJ110	1-560-064-00	PIN, CONNECTOR 6P			
D101	8-719-107-94	DIODE 1SS202-1			
D102	8-719-107-94	DIODE 1SS202-1			
D103	8-719-107-94	DIODE 1SS202-1			
D202	8-719-107-94	DIODE 1SS202-1			
D203	8-719-107-94	DIODE 1SS202-1			
D301	8-719-107-94	DIODE 1SS202-1			
D302	8-719-107-94	DIODE 1SS202-1			
D303	8-719-910-92	DIODE HZ9A2L			
D402	8-719-107-94	DIODE 1SS202-1			
D403	8-719-107-94	DIODE 1SS202-1			
D404	8-719-902-78	DIODE SLR-34DC5			
D405	8-719-934-05	DIODE SLR-34URC5			
D408	8-719-910-68	DIODE HZ6C2L			
D409	8-719-911-12	DIODE HZ11B2L			
D411	8-719-107-94	DIODE 1SS202-1			

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- Due to standardization, parts with part numbers (Δ-ΔΔΔ-ΔΔΔ-XX or Δ-ΔΔΔΔ-ΔΔΔ-X) may be different from those used in the set.
- If there are two or more same circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

CAPACITORS:

- All capacitors are in μF. Common capacitors are omitted. Refer to the following lists for their part numbers. MF:μF, PF:μμF.

COILS

- MMH : mH, UH : μH

SEMICONDUCTORS

In each case, U : μ, for example:
UA···: μA···, UPA···: μPA···, UPC···: μPC,
UPD···: μPD···

ELECTRICAL PARTS

Ref.No.	Part No.	Description
D412	8-719-107-94	DIODE 1SS202-1
D413	8-719-910-75	DIODE HZ7B2L
D415	8-719-815-55	DIODE 1S1555
D416	8-719-815-55	DIODE 1S1555
HE1	8-825-559-10	HEAD, ERAZE (EF-250-36)
HRP101	8-825-548-30	HEAD, RP
HRP201	8-825-548-30	HEAD, RP
IC101	8-759-800-36	IC LA3160
IC102	8-759-300-74	IC CX174A
IC103	8-759-800-92	IC LA3220
IC202	8-759-300-74	IC CX174A
L101	1-408-262-00	MICRO INDUCTOR 27MMH
L201	1-408-262-00	MICRO INDUCTOR 27MMH
L301	1-407-169-XX	MICRO INDUCTOR 100UH
L302	1-433-281-11	TRANSFORMER, BIAS OSCILLATOR
L401	1-407-165-XX	MICRO INDUCTOR 47UH
M1	1-541-201-00	MOTOR
PM1	1-454-316-00	SOLENOID, PLUNGER
PM2	1-454-316-00	SOLENOID, PLUNGER
Q101	8-729-178-54	TRANSISTOR 2SC2785
Q102	8-729-178-54	TRANSISTOR 2SC2785
Q103	8-729-606-32	TRANSISTOR 2SC2603
Q201	8-729-178-54	TRANSISTOR 2SC2785
Q202	8-729-178-54	TRANSISTOR 2SC2785
Q301	8-729-178-54	TRANSISTOR 2SC2785
Q302	8-729-178-54	TRANSISTOR 2SC2785
Q303	8-729-178-54	TRANSISTOR 2SC2785
Q304	8-729-117-54	TRANSISTOR 2SA1175
Q305	8-729-606-32	TRANSISTOR 2SC2603
Q306	8-729-606-32	TRANSISTOR 2SC2603
Q307	8-729-606-32	TRANSISTOR 2SC2603
Q308	8-729-117-54	TRANSISTOR 2SA1175
Q309	8-729-178-54	TRANSISTOR 2SC2785
Q310	8-729-178-54	TRANSISTOR 2SC2785
Q401	8-729-117-54	TRANSISTOR 2SA1175
Q402	8-719-902-90	PHOTO INTERRUPTOR SPI201-20
Q403	8-729-178-54	TRANSISTOR 2SC2785
Q404	8-729-178-54	TRANSISTOR 2SC2785
Q405	8-729-178-54	TRANSISTOR 2SC2785
Q406	8-729-178-54	TRANSISTOR 2SC2785
Q412	8-729-117-54	TRANSISTOR 2SA1175
Q413	8-729-201-78	TRANSISTOR 2SD1406
Q414	8-729-177-43	TRANSISTOR 2SD774
R101	1-247-865-00	CARBON 27K 5% 1/6W
R102	1-247-807-00	CARBON 100 5% 1/6W
R103	1-247-882-00	CARBON 130K 5% 1/6W

ELECTRICAL PARTS

Ref.No.	Part No.	Description
R104	1-247-848-00	CARBON 5.1K 5% 1/6W
R105	1-247-823-00	CARBON 470 5% 1/6W
R106	1-247-859-00	CARBON 15K 5% 1/6W
R107	1-247-861-00	CARBON 18K 5% 1/6W
R108	1-247-887-00	CARBON 220K 5% 1/6W
R109	1-247-871-00	CARBON 47K 5% 1/6W
R110	1-247-871-00	CARBON 47K 5% 1/6W
R111	1-247-891-00	CARBON 330K 5% 1/6W
R112	1-247-888-00	CARBON 240K 5% 1/6W
R113	1-247-888-00	CARBON 240K 5% 1/6W
R114	1-247-857-00	CARBON 12K 5% 1/6W
R115	1-247-807-00	CARBON 100 5% 1/6W
R116	1-247-850-00	CARBON 6.2K 5% 1/6W
R117	1-247-821-00	CARBON 390 5% 1/6W
R118	1-247-807-00	CARBON 100 5% 1/6W
R119	1-247-896-00	CARBON 510K 5% 1/6W
R120	1-247-875-00	CARBON 68K 5% 1/6W
R121	1-247-867-00	CARBON 33K 5% 1/6W
R122	1-247-871-00	CARBON 47K 5% 1/6W
R123	1-247-855-00	CARBON 10K 5% 1/6W
R124	1-247-831-00	CARBON 1K 5% 1/6W
R125	1-247-879-00	CARBON 100K 5% 1/6W
R126	1-247-879-00	CARBON 100K 5% 1/6W
R127	1-247-831-00	CARBON 1K 5% 1/6W
R128	1-247-876-00	CARBON 75K 5% 1/6W
R129	1-247-883-00	CARBON 150K 5% 1/6W
R130	1-247-883-00	CARBON 150K 5% 1/6W
R131	1-247-886-00	CARBON 200K 5% 1/6W
R132	1-247-855-00	CARBON 10K 5% 1/6W
R133	1-247-848-00	CARBON 5.1K 5% 1/6W
R134	1-247-813-00	CARBON 180 5% 1/6W
R135	1-247-867-00	CARBON 33K 5% 1/6W
R136	1-247-825-00	CARBON 560 5% 1/6W
R137	1-247-859-00	CARBON 15K 5% 1/6W
R138	1-247-859-00	CARBON 15K 5% 1/6W
R139	1-247-863-00	CARBON 22K 5% 1/6W
R140	1-247-819-00	CARBON 330 5% 1/6W
R141	1-247-827-00	CARBON 680 5% 1/6W
R142	1-247-809-00	CARBON 120 5% 1/6W
R143	1-247-851-00	CARBON 6.8K 5% 1/6W
R144	1-247-855-00	CARBON 10K 5% 1/6W
R145	1-247-851-00	CARBON 6.8K 5% 1/6W
R146	1-247-824-00	CARBON 510 5% 1/6W
R147	1-247-839-00	CARBON 2.2K 5% 1/6W
R148	1-247-847-00	CARBON 4.7K 5% 1/6W

NOTE:

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- Items marked " ♦ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part numbers (Δ-ΔΔΔ-ΔΔΔ-XX or Δ-ΔΔΔΔ-ΔΔΔ-X) may be different from those used in the set.
- If there are two or more same circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

CAPACITORS:

- All capacitors are in μF. Common capacitors are omitted. Refer to the following lists for their part numbers. MF:μF, PF:μμF.

COILS

- MMH : mH, UH : μH

SEMICONDUCTORS

In each case, U : μ, for example:
UA···: μA···, UPA···: μPA···, UPC···: μPC,
UPD···: μPD···

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
R149	1-247-903-00	CARBON	1M	5%	1/6W
R150	1-247-903-00	CARBON	1M	5%	1/6W
R151	1-247-903-00	CARBON	1M	5%	1/6W
R152	1-247-823-00	CARBON	470	5%	1/6W
R153	1-247-859-00	CARBON	15K	5%	1/6W
R301	1-247-851-00	CARBON	6.8K	5%	1/6W
R302	1-247-865-00	CARBON	27K	5%	1/6W
R303	1-247-165-00	CARBON	27K	5%	1/4W
R304	1-247-863-00	CARBON	22K	5%	1/6W
R305	1-246-505-00	CARBON	22K	5%	1/4W
R306	1-247-877-00	CARBON	82K	5%	1/6W
R307	1-247-847-00	CARBON	4.7K	5%	1/6W
R308	1-247-889-00	CARBON	270K	5%	1/6W
R309	1-247-863-00	CARBON	22K	5%	1/6W
R310	1-247-887-00	CARBON	220K	5%	1/6W
R311	1-247-887-00	CARBON	220K	5%	1/6W
R312	1-247-823-00	CARBON	470	5%	1/6W
R313	1-247-827-00	CARBON	680	5%	1/6W
R314	1-247-831-00	CARBON	1K	5%	1/6W
R315	1-247-863-00	CARBON	22K	5%	1/6W
R316	1-247-863-00	CARBON	22K	5%	1/6W
R320	1-247-853-00	CARBON	8.2K	5%	1/6W
R321	1-247-853-00	CARBON	8.2K	5%	1/6W
R322	1-247-777-00	CARBON	5.6	5%	1/6W
R323	1-247-855-00	CARBON	10K	5%	1/6W
R324	1-247-851-00	CARBON	6.8K	5%	1/6W
R325	1-247-861-00	CARBON	18K	5%	1/6W
R326	1-247-823-00	CARBON	470	5%	1/6W
R327	1-247-855-00	CARBON	10K	5%	1/6W
R328	1-247-847-00	CARBON	4.7K	5%	1/6W
R329	1-247-871-00	CARBON	47K	5%	1/6W
R330	1-247-147-00	CARBON	4.7K	5%	1/4W
R331	1-247-147-00	CARBON	4.7K	5%	1/4W
R332	1-247-863-00	CARBON	22K	5%	1/6W
R333	1-247-823-00	CARBON	470	5%	1/6W
R334	1-247-849-00	CARBON	5.6K	5%	1/6W
R405	1-247-839-00	CARBON	2.2K	5%	1/6W
R406	1-247-839-00	CARBON	2.2K	5%	1/6W
R409	1-247-863-00	CARBON	22K	5%	1/6W
R410	1-247-863-00	CARBON	22K	5%	1/6W
R411	1-247-887-00	CARBON	220K	5%	1/6W
R412	1-246-505-00	CARBON	22K	5%	1/4W
R413	1-247-831-00	CARBON	1K	5%	1/6W
R414	1-247-855-00	CARBON	10K	5%	1/6W
R415	1-247-879-00	CARBON	100K	5%	1/6W

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
R417	1-247-825-00	CARBON	560	5%	1/6W
R418	1-247-821-00	CARBON	390	5%	1/6W
R419	1-247-807-00	CARBON	100	5%	1/6W
R420	1-247-807-00	CARBON	100	5%	1/6W
R421	1-247-147-00	CARBON	4.7K	5%	1/4W
R422	1-247-872-00	CARBON	51K	5%	1/6W
R423	1-247-863-00	CARBON	22K	5%	1/6W
R424	1-247-879-00	CARBON	100K	5%	1/6W
R425	1-247-855-00	CARBON	10K	5%	1/6W
R426	1-247-825-00	CARBON	560	5%	1/6W
R431	1-247-827-00	CARBON	680	5%	1/6W
R432	1-247-831-00	CARBON	1K	5%	1/6W
R433 ⚠	1-212-934-00	FUSIBLE	1	5%	1/2W F
RV101	1-226-240-00	RES, ADJ, CARBON 200K			
RV102	1-226-236-00	RES, ADJ, CARBON 10K			
RV103	1-226-238-00	RES, ADJ, CARBON 50K			
RV201	1-226-240-00	RES, ADJ, CARBON 200K			
RV202	1-226-236-00	RES, ADJ, CARBON 10K			
RV203	1-226-238-00	RES, ADJ, CARBON 50K			
RY1	1-515-529-11	RELAY			
S101	1-554-756-11	SWITCH, PUSH (3 KEY) TAPE SELECTOR			
S102	1-554-756-11	SWITCH, PUSH (3 KEY) TAPE SELECTOR			
S103	1-554-756-11	SWITCH, PUSH (3 KEY) TAPE SELECTOR			
S105	1-554-419-00	SWITCH, PUSH (1 KEY) DOLBY NR			
S201	1-554-756-11	SWITCH, PUSH (3 KEY) TAPE SELECTOR			
S202	1-554-756-11	SWITCH, PUSH (3 KEY) TAPE SELECTOR			
S203	1-554-756-11	SWITCH, PUSH (3 KEY) TAPE SELECTOR			
S301	1-516-870-00	SWITCH, SLIDE 1SS			
S401	1-552-412-00	SWITCH, KEY BOARD ○ REC MUTE			
S402	1-552-412-00	SWITCH, KEY BOARD ●, ▶ REC			
S403	1-552-412-00	SWITCH, KEY BOARD ▮▮ PAUSE			
S404	1-552-412-00	SWITCH, KEY BOARD ▶▶, ▶▶/◀◀ AMS			
S405	1-552-412-00	SWITCH, KEY BOARD ▶ FWD			
S406	1-552-412-00	SWITCH, KEY BOARD □, ▶ AUTO PLAY			
S407	1-552-412-00	SWITCH, KEY BOARD ◀ REV			
S408	1-552-412-00	SWITCH, KEY BOARD ◀◀, ◀◀/▶▶ AMS			
S409	1-554-757-11	SWITCH, SLIDE TIMER STANDBY			
S410	1-552-370-00	SWITCH, SLIDE DIRECTION MODE			
S411	1-554-205-00	SWITCH, PUSH			
S412	1-554-205-00	SWITCH, PUSH ACCIDENTAL ERASER PREVENTION			

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CAPACITORS:

- All capacitors are in μF. Common capacitors are omitted. Refer to the following lists for their part numbers. MF:μF, PF:μμF.

COILS

- MMH : mH, UH : μH

SEMICONDUCTORS

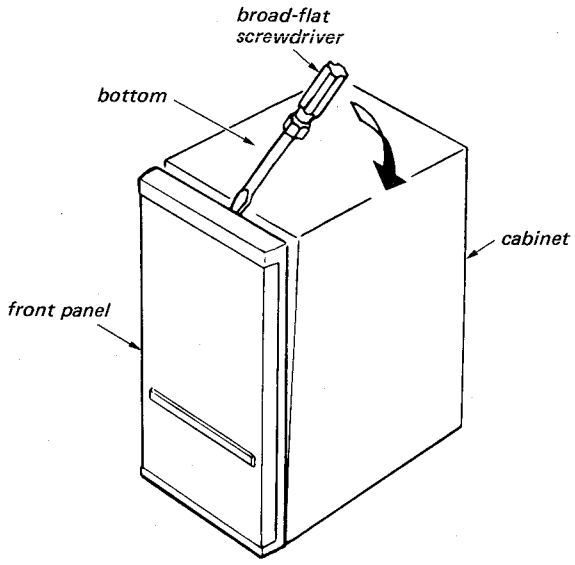
In each case, U : μ, for example:
UA···: μA···, UPA···: μPA···, UPC···: μPC, UPD···: μPD···

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Les composants identifiés par une trame et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

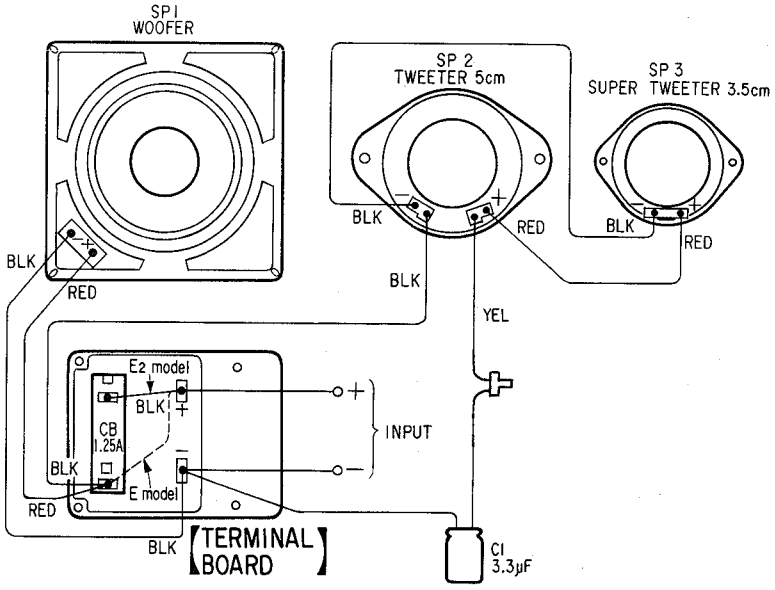
SPEAKER SYSTEM
〔APM-058〕

1. DISASSEMBLY
FRONT PANEL REMOVAL

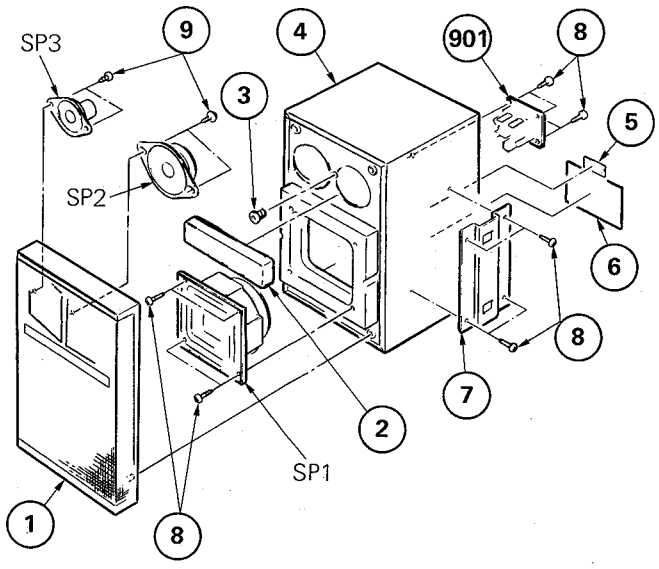


Note: Be careful not to scratch the cabinet.

2. WIRING DIAGRAM



3. EXPLODED VIEW AND PARTS LIST



No.	Part No.	Description	REMARKS
1	X-4910-022-1	(SILVER)...PANEL (LEFT) ASSY (S), FRONT	
	X-4910-023-1	(SILVER)...PANEL (RIGHT) ASSY (S), FRONT	
	X-4910-024-1	(BLACK)....PANEL (LEFT) ASSY (B), FRONT	
	X-4910-025-1	(BLACK)....PANEL (RIGHT) ASSY (B), FRONT	
2	4-910-037-01	ABSORBENT (A), ACOUSTIC	
3	4-910-041-01	CLAMP	
4	X-4910-001-1	(SILVER)...CABINET ASSY (S), SPEAKER	
	X-4910-002-1	(BLACK)....CABINET ASSY (B), SPEAKER	
5	*4-910-028-01	(E)....LABEL, MODEL NUMBER	
	*4-910-029-01	(E2)...LABEL, MODEL NUMBER	
6	*4-875-621-00	LABEL, CAUTION	
7	*4-902-981-01	(SILVER)...PLATE (B), SIDE	
	*4-902-981-11	(BLACK)....PLATE (B), SIDE	
8	4-874-614-11	SCREW (4) (3.5X14), TAPPING	
9	7-685-646-71	SCREW +BVTP 3X8 TYPE2 SLIT	

ELECTRICAL PARTS

Ref.No.	Part No.	Description		
901	1-536-900-11	TERMINAL BOARD, SPEAKER		
C1	1-123-546-00	CAP, ELECT (NONPOLAR) 3.3MF	20%	50V
CB	1-532-664-00	(E2)...CIRCUIT BREAKER 1.25A		
SP1	8-927-209-00	SPEAKER APM (WOOFER)		
SP2	1-503-467-11	SPEAKER, CONE (5CM)(LEFT)		
SP2	1-503-468-11	SPEAKER, CONE (5CM)(RIGHT)		
SP3	1-503-461-21	SPEAKER, CONE (3.5CM)		

FH-5

SERVICE MANUAL

AEP Model
UK Model
E Model

No. 1
August, 1985

SUPPLEMENT

File this supplement with the service manual.

TC-58

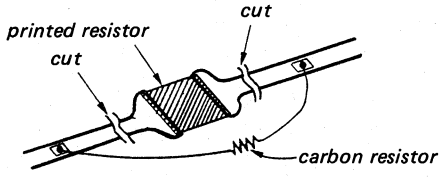
- Schematic and mounting diagrams have been changed to use pc board having printed resistors.
- Following parts have been changed.

R433	→	jumper
D413	→	R434 12k (1-247-857-00)
C141	→	omitted

– SERVICING NOTE –

Repairing printed resistor

Cut both sides of the resistor and solder the carbon resistor having same value in place of printed one on the conductor side.



MICROFILM

Sony Corporation

COMPACT HI-DENSITY COMPONENT SYSTEM

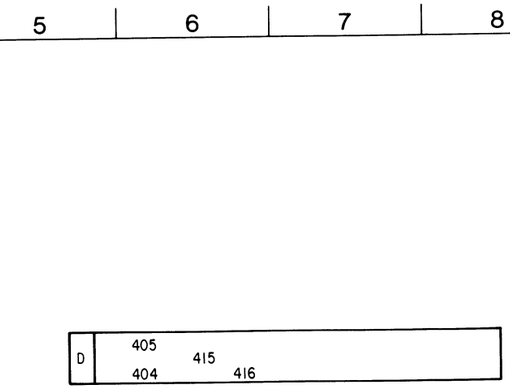
SONY®

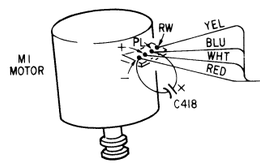
English
85H0665-1
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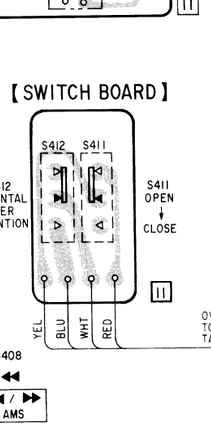
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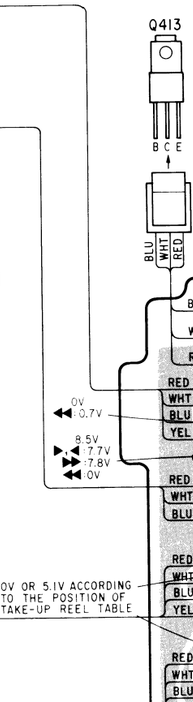
FH-5
TC-58

MOUNTING DIAGRAM



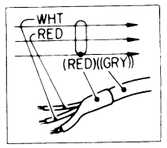






Note:

- Color code of sleeving over the end of the jacket.



- ○— : parts extracted from the component side.
- ●— : parts extracted from the conductor side.
- [ ]— : indicates side identified with part number.
- : B + pattern
- : Printed resistor.
- : signal path
- : L-CH signal path
- : R-CH signal path

7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23

A B C D E F G H I J

M1 MOTOR
RW BL YEL BLU WHT RED C418

【INTERRUPT BOARD】
RED WHT BLU 5.8V R426 560 Q402 R425 10k

【SWITCH BOARD】
S412 ACCIDENTAL ERASER PREVENTION OFF ON
S411 OPEN CLOSE
YEL BLU WHT RED

S404 ▶▶ ▶▶/◀◀ AMS
S408 ◀◀ ◀◀/▶▶ AMS
S406 ▶ AUTO PLAY

Q413 B C E
BLU WHT RED

HE1
BLK WHT ORG
TYPE I 15.5VAC
TYPE II 17.3VAC
TYPE IV 29VAC

HRP101, 201
【HEAD TRANSLATION BOARD】
PLAYBACK INPUT
WHT BLU GRN RED
PNK WHT PNK (WHT) (RED)

S410 DIRECTION MODE
S301 ISS 3 2 1

PLAYBACK OUTPUT
TO TA-58
Vcc GND REC (L) GND REC (R) GND PB (L) GND PB (R) GND MOTOR Vcc BATTERY + GND

【CASSETTE BOARD】
CN101 1 2 3 4 5 6 7 8 9 10 11 12 13
CN102 RED WHT
DRY BATTERY SIZE "D" (IEC DESIGNATION R20) 10PCS, 15V
WHT RED

0V 0.7V 8.5V 7.7V 7.8V 0V
0V OR 5.1V ACCORDING TO THE POSITION OF TAKE-UP REEL TABLE

CN103 RED WHT BLU
CN104 RED WHT BLU YEL
CN105 RED WHT BLU YEL
CN106 RED WHT BLU YEL BLK BRN RED WHT BLU YEL BLK BRN
CN107 R422 5.1k
CN108 RED WHT
CN109 BLK

150mV 112μS

PM2 FF/REVERSE/AMS
RED WHT
PM1 HEAD
BLU YEL

PL2 WHT RED ◀
PL1 WHT RED ▶

DOLBY ON : 2.6V DOLBY OFF : 1.4V
DOLBY ON : 3.2V DOLBY OFF : 2.4V
DOLBY ON: 2.6V DOLBY OFF: 1.4V
DOLBY ON: 3.2V DOLBY OFF: 2.4V

S101-1,-2 S201-1,-2 TAPE TYPE I NORMAL ON ↑ OFF
S102-1,-2 S202-2 TAPE TYPE II CrO2 ON ↑ OFF
S103-1,-2 S203-1 TAPE TYPE IV METAL ON ↑ OFF

(CHASSIS)

IC, Q	D
413	
402	
	409
306 102, 202	413 408
404, 403, 414 IC101	302
	203
405, 406, 305	103
	102
412 310	411, 202
401 IC103	
307, 103	
	412
IC401	101
IC102, IC202	
101, 201	403, 402
301, 309, 308	
304, 302, 303	
	301, 303
IC, Q	D

SCHEMATIC DIAGRAM

【CASSETTE BOARD】

IC101 LA3160 EQ AMP

IC102, 202 CX-174A DOLBY/LINE AMP/RECORD AMP

Q101, 201 2SC2785 RECORD MUTING

IC103 LA3220 AUTOMATIC RECORDING LEVEL CONTROL

Q102, 202 PLAYBACK

D102, 103, 202, 203 ISS202-1

【CONTROL BOARD(1/3)】

D101 ISS202-1

Q412 2SA1175 LINE MUTE SWITCH

D411, 412 ISS202-1

D302 ISS202-1

Q310 2SC2785 10V RELAY DRIVE

D301 ISS202-1

Q305, 306 2SC2603 BIAS OSC

Q307 2SC2603 BIAS OSC SWITCH

Q308 2SA1175 Q309 2SC2785 BIAS OSC SWITCH CONTROL

Q301 2SC2785 AMS MUTING

Q302, 303 2SC2785 AMS DET

D303 HZ9A2L REGULATOR

D404 SLR34DC5
D405 SLR34URC5

Q304 2SA1175 AMS DET

IC401 TC9310N-47 SYSTEM CONTROL

Q401 2SA1175 SWITCHING

Q402 SPI 201-20 SHUT-OFF DETECTOR

【CONTROL BOARD (1/3)】 【SWITCH BOARD】 【INTERRUPT BOARD】 【LED

SCHEMATIC DIAGRAM

【CASSETTE BOARD】

IC101 LA3160 EQ AMP

IC102, 202 CX-174A DOLBY/LINE AMP/RECORD AMP

Q101, 201 2SC2785 RECORD MUTING

IC103 LA3220 AUTOMATIC RECORDING LEVEL CONTROL

Q102, 202 PLAYBACK

D102, 103, 202, 203 ISS202-1

【CONTROL BOARD(1/3)】

D101 ISS202-1

Q412 2SA1175 LINE MUTE SWITCH

D411, 412 ISS202

D302 ISS202-1

D301 ISS202-1

Q310 2SC2785 10V RELAY DRIVE

IC401 TC9310N-47 SYSTEM CONTROL

Q401 2SA1175 SWITCHING

Q305, 306 2SC2603 BIAS OSC

Q307 2SC2603 BIAS OSC SWITCH

Q308 2SA1175 Q309 2SC2785 BIAS OSC SWITCH CONTROL

Q301 2SC2785 AMS MUTING

Q302, 303 2SC2785 AMS DET

Q304 2SA1175 AMS DET

D303 HZ9A2L REGULATOR

D404 SLR34DC5
D405 SLR34URC5

【CONTROL BOARD (1/3)】

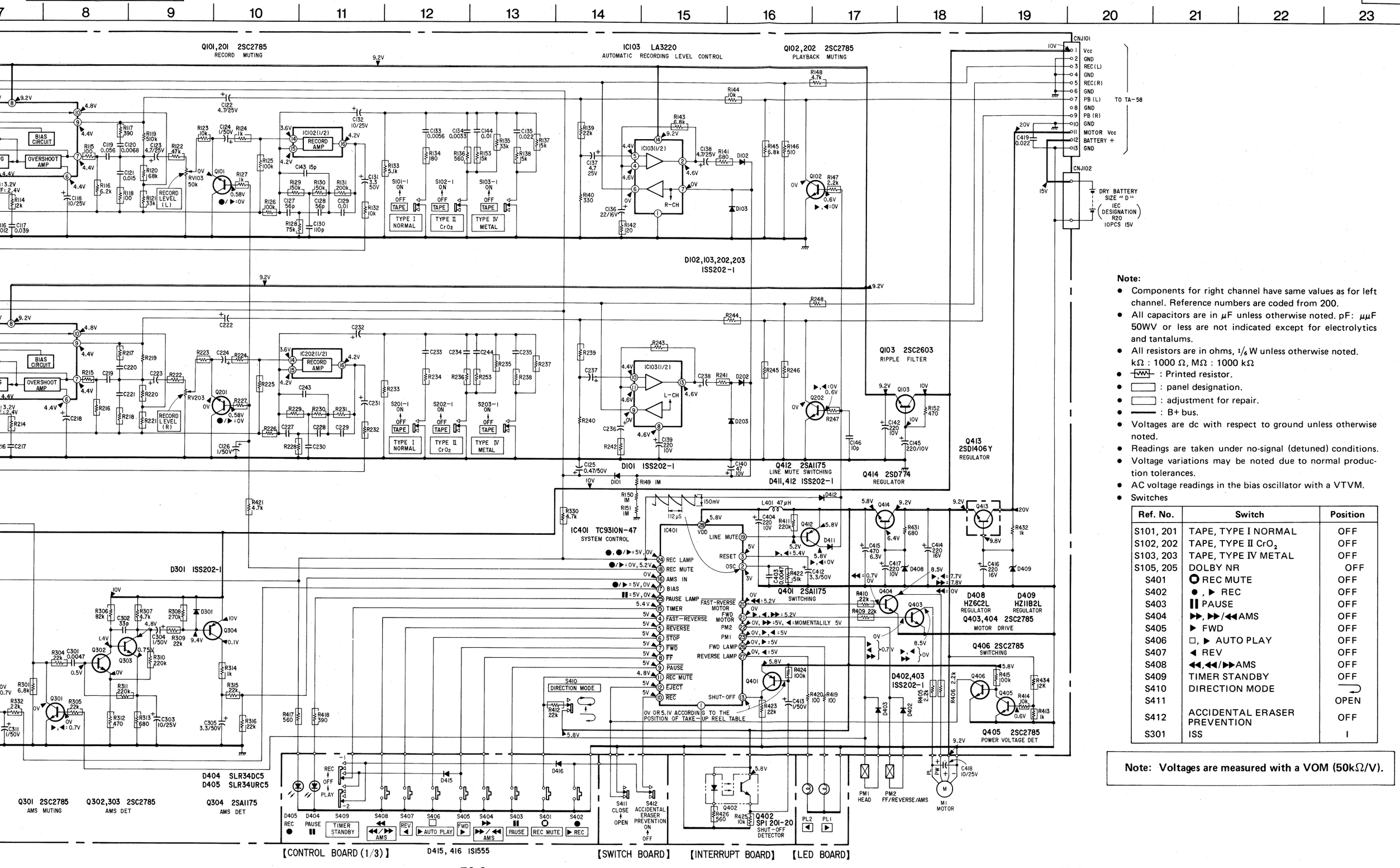
D415, 416 ISI555

【SWITCH BOARD】

【INTERRUPT BOARD】

Q402 SPI 201-20 SHUT-OFF DETECTOR

【LED



Note:

- Components for right channel have same values as for left channel. Reference numbers are coded from 200.
- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in ohms, 1/6 W unless otherwise noted. kΩ : 1000 Ω, MΩ : 1000 kΩ
- ⏦ : Printed resistor.
- ▭ : panel designation.
- ▭ : adjustment for repair.
- ——— : B+ bus.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken under no-signal (detuned) conditions.
- Voltage variations may be noted due to normal production tolerances.
- AC voltage readings in the bias oscillator with a VTVM.
- Switches

Ref. No.	Switch	Position
S101, 201	TAPE, TYPE I NORMAL	OFF
S102, 202	TAPE, TYPE II CrO_2	OFF
S103, 203	TAPE, TYPE IV METAL	OFF
S105, 205	DOLBY NR	OFF
S401	⭘ REC MUTE	OFF
S402	● , ▶ REC	OFF
S403	▮▮ PAUSE	OFF
S404	▶▶, ▶▶/◀◀ AMS	OFF
S405	▶ FWD	OFF
S406	□, ▶ AUTO PLAY	OFF
S407	◀ REV	OFF
S408	◀◀, ◀◀/▶▶ AMS	OFF
S409	TIMER STANDBY	OFF
S410	DIRECTION MODE	⮌
S411	ACCIDENTAL ERASER PREVENTION	OPEN
S412		OFF
S301	ISS	I

Note: Voltages are measured with a VOM (50kΩ/V).